EDITORIAL

Safeguarding Their Designs

APPROXIMATELY 25 per cent of all the cars exhibited at the 1925 New York Salon were of the town car type—cabriolets, broughams or landaulets—a considerably larger percentage than has been shown at previous Salons. The reason for this trend, possibly, is the desire of custom coach builders to enjoy the fruits of their labors over a longer period of time than has been possible before. It has been said, and perhaps with considerable justice, that designs introduced at the Salon on custom bodies may be found on production cars at the next year's Annual Show.

Town cars make up a very small proportion of the total cars produced and nearly all of them are custom built. It may be, therefore, that *carrossiers* are concentrating on these types in an effort to increase the distinctive life of their designs. Many of the new features introduced on Salon exhibits were found on town cars and a goodly share of them were of such nature as to make them applicable to no other type of body. Thus the designers can rest in the assurance that modifications of their body treatment will not be used on large production cars next year to reduce greatly the essential feature of individuality of their custom bodies.

The sedan and limousine bodies shown were, with few exceptions, not greatly different in design than standard jobs. Bold coloring was the outstanding feature of these bodies. Open models, on the other hand, gave evidence of the prevailing trend to make this type the distinctive one in comparison with the closed models which are now owned by the multitude. Sport phaetons and roadsters were quite individualistic in design and were in close competition with town cars for evidences of careful attention to detail design from the body builders.

Solid Tires for Spares

FROM England comes an idea that might be of interest to American builders of light trucks fitted with pneumatic tires. Dennis Bros., Ltd., have just brought out a new 1½ ton model on which pneumatic cord tires are standard equipment, but with the job goes a spare wheel which has a solid tire.

This would seem at first glance to be a curious practice, but there are some arguments in favor of it. The present-day pneumatic cord tire is so well built that it is generally good for from 10,000 to 20,000 miles of service. It is necessary to carry a spare, but often it may be hauled about for long periods without being called into use. If it is of the pneumatic type it deteriorates through this non-use and frequently may be found deflated, or under-inflated, when an emergency requires it to be brought into service.

The initial cost of a solid tire is less than a pneumatic and its depreciation through non-use is considerably less.

Perhaps this ought to be called an emergency tire, rather than a spare, as it would naturally be taken off again as soon as the pneumatic it replaced could be repaired.

On the truck under discussion the rear wheels are fitted with 34 x 7 cords and the front wheels with 33 x 5 cords, while the solid tire is 34 in. in diameter and can be used either front or rear. Demountable wheels, of course, are used.

Wide Tread Chassis

BODY builders specializing in custom built bodies for a long time have been advocating the use of a tread somewhat larger than standard, in order to enable them to fit bodies that afford sufficient room to seat three persons comfortably in a single seat. With a 56-in tread the space between wheelhouses has always been inadequate for a comfortable three passenger seat, and a number of recent developments in automobile manufacture have further encroached upon this space.

Originally the rear seat was extended over the wheel houses, and that provided all the room needed. But as chassis heights decreased it became necessary to place the seats entirely between the houses, and a number of manufacturers then turned out cars in two, four and six passenger styles, instead of two, five and seven. Recently the introduction of balloon tires has further encroached upon the space available with the standard tread.

It is undoubtedly with a view to giving the body designer all the space needed for comfortable three passenger rear seats that the new Locomobile, described elsewhere in this issue, is made with a tread about 2 in. wider than the normal. It is expected that many of the purchasers of this car will order custom-built bodies, and the provision of this extra space affords the body engineer greater latitude in his layouts.

TRADE DAYS

at the New York Show

Monday Morning
January 11

Tuesday Morning
January 12

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, *Thursday, November 26, 1925*

Dealer Stocks Increase Rapidly, But so Far are Not Too Large

PHILADELPHIA, Nov. 26—Dealer stocks of new passenger cars have been increasing steadily for the last two or three weeks, but they have not yet become unwieldy. Production is still at an unusually high rate for this time of year, and sales have not held up correspondingly. There are indications that the stocks on dealers' floors increased more than 100,000 during October and that at least as large an increase can be expected in November provided production maintains its present pace until the end of the month.

These increases are in line with sound practice thus far as dealers always have stocked extra cars in the Winter months. With a supply of cars that enables him to give immediate delivery on any model called for, the dealer is in a better merchandising position than he would otherwise be. Manufacturers are expected to shut down production in time to prevent any serious overstocking.

Retail Financing Terms Liberal

The retail financing situation is causing concern, particularly on the Pacific Coast where extremely liberal terms are being extended, in the case of one popular line of cars at least. Despite efforts of several large manufacturers and some of the banks to keep credit terms on a sound basis, local competitive conditions still rule. The next thirty days may see even more strenuous competition in this field.

The effect of liberal new car instalment terms on used car buying is beginning to become more pronounced in some sections. Both manufacturers and dealers are giving serious thought to disposition of the used car problem in the next six months.

One price cut was announced last week and rumors of several others are going through the industry, despite the fact that material prices are on the upgrade and that wage rates have not fallen. Materials such as sheet steel and hardwood are higher now than they were a month or two ago, and tires are considerably higher, though most of the manufacturers have their current commitments covered by contracts made at lower levels than are now in effect. Competition and the need for maintaining production to keep down overhead are the bearish factors, being opposed by the higher costs, the consideration that the Winter is not the best time to revise lists, and the probable reaction on the used car market.

Detroit Plans for Bus Show in 1926

DETROIT, Nov. 23—Detroit will be the place for the Second National Motor Bus Show, C. E. Stone, chairman of the general committee, said today. The decision to hold the show again next year, in all probability at Convention Hall, was reached at a meeting of the committee.

Willys-Overland Adopts C.I.T. Plan

Latter to Assist in Financing Purchases and Insuring Former's Cars

NEW YORK, Nov. 24—The Willys-Overland Co., of Toledo, has been added to the group of automobile manufacturers whose dealers are assisted by the Commercial Investment Trust Corp. of New York in financing purchases and placing insurance on their automobiles.

The group so financed includes also Dodge, Hupmobile, Chandler, Nash, Paige-Jewett, Reo, Cleveland and Franklin.

Recent C. I. T. Financing

The Commercial Investment Trust Corp., according to a recent announcement, has sold to a banking group, headed by Dillon, Read & Co., of this city, $7,500,000 6½ per cent preferred stock in the corporation, and, further, has arranged with the same group to underwrite 72,000 shares of its common stock, to provide additional funds for operating purposes. The common will be offered to stockholders, it is learned on good authority, on a basis of one of the old for five of the new, at $60 per share. This transaction will bring to the Commercial Investment Trust Corp. approximately $5,000,000, in addition to the proceeds of the public sale of the preferred.

It is announced that the Commercial Investment Trust Corp. has increased its annual dividend rate in the common stock to $3.60 a share, as compared with the former annual rate of $2.50 a share. The new dividend will be payable Jan. 1 and successive quarters, instead of Feb. 15 as heretofore. The directors further declared a dividend of 45c a share for the interim period between Nov. 15, the last dividend date under the old plan, and Dec. 31, 1925, the next dividend date under the new one. The dividend is payable Jan. 1, 1926, to holders of record of Dec. 15, 1925.

CAR UNDERWRITERS CUT COMMISSIONS 5%

NEW YORK, Nov. 23—The National Automobile Underwriters' Conference, at its annual meeting here last week, reduced the acquisition cost or commission paid to agents from 25 to 20 per cent, the reduction to apply generally among members of the Conference throughout the country.

It was the opinion of some of those who attended that this reduction in commissions promised a reduction in rates in the not distant future.

Frederick C. White, vice-president of the Hartford Fire Insurance Co., was elected president; William R. Hedge, of Boston, vice-president, and Herbert W. Ellis, assistant manager of the Phoenix of London, treasurer.

G. M. and Vauxhall Merger Consummated

NEW YORK, Nov. 23—Alfred P. Sloan, Jr., president of General Motors, has announced that merger negotiations between his company and Vauxhall Motors, Ltd., of Luton, England, have been consummated through the approval of stockholders, and that the number of directors has been increased from four to seven, the three additional representing General Motors.

It was further announced that Vauxhall Motors, Ltd., would continue under the same management, without change in operating policies.

G. M. Net Profit to be $100,000,000

NEW YORK, Nov. 26—General Motors Acceptance Corp. reports October retail volume as an increase of 171.4 per cent over the same month last year. The September increase was 137 per cent.

C. C. Cooper, president of G. M. A. C., says that the new low-rate G. M. A. C. plan, backed by direct advertising, undertaken Sept. 1, is extremely successful.

Total distribution to common stockholders of $12 per share for this year, declared by General Motors' officials to be about 60 per cent of the year's earnings, indicates that an income of about $20 per common share is anticipated, somewhat higher than any previous estimates. Continued high sales volume in November and December is expected to make earnings in the final quarter at least equal to those of the preceding quarter, bringing total net income for the full year to more than $100,000,000.

Stockholders Will Vote on Fageol Sale

American Car & Foundry Would Organize Fageol-Hall-Scott Company

OAKLAND, CAL., Nov. 26—A plan for the sale of Fageol Motors Co. to American Car & Foundry has been presented to stockholders of the former. A two-thirds vote is necessary for ratification of the merger, but the result probably will not be known until the end of November.

Details of the plan given out here indicate that the stockholders of the Fageol Co. will receive a value of approximately $14 on the common stock. A new corporation is to be formed, called the Fageol-Hall-Scott Co., with a capitalization of 100,000 shares of par value of $100, and 300,000 shares of no par value common, which will have a market value of about $50. Fageol stockholders will receive full par value of $10 on the common and will, therefore, receive one share of the $50 common in the new company for five $10 common shares now held, and one new share of the $100 preferred for each twenty-five shares of common now held, thus making Fageol common now worth $14 a share in the stock of the new company. Present preferred stockholders will receive one new share of preferred for each ten shares now held, callable at $110 per share.

Ohio Fageol Has Ratified

The Fageol Co., of Ohio, has ratified the deal. In the event that Fageol of California does not ratify it, the new corporation will receive a royalty on each bus built by both Fageol companies, inasmuch as American Car & Foundry now controls the manufacture of the Hall-Scott engine used in the Fageol bus. In this event, also, Fageol of California will be limited to operation and sales on the Pacific Coast only.

Fageol will earn this year about $3 a share, and, if the merger were not pending, could pay a dividend of $1 a share easily. The company puts orders for 1925 at above the $750,000 mark.

U. S. Representative of Tillings-Stevens Named

NEW YORK, Nov. 24—Morgan, Livermore & Co., it is announced here, has been appointed the fiscal representative in this country of Tillings-Stevens Motor, Ltd.

Commercial Investment Trust's Foreign Plans

NEW YORK, Nov. 23—It is reported here that the Commercial Investment Trust Corp. is considering extending its activities to the European field to facilitate distribution of the products of the American industries which it serves. American automobile manufacturers, it is said, feel that the American system of financing purchases will stimulate business there.

Henry Ittleson, president, and Edwin C. Vogel, vice president, have recently returned from abroad, where, it is reported, they had been studying the foreign field. C. L. Hemphill, another vice president, is at present in Europe. It was said that the company would probably open its first European office in London, and later on would extend its branches to the Continent.

Lehigh Co. Puts Out New 2-Ton Truck

ALLENTOWN, PA., Nov. 24—A newcomer in the motor truck manufacturing field, the Lehigh Co., has announced a 2-ton truck. A notable feature is the weight, only 3,270 lbs., or 730 lbs. less than the pay load which it can carry. A 4 by 5 in. Hercules thermo-syphon cooled engine furnishes power with which a speed of 45 m. p. h. can be attained.

Brief specifications are: Multiple disk clutch, battery ignition, two section tubular propeller shaft with SKF self-aligning center bearing, Ross steering gear, spiral bevel gear rear axle, with gear ratio of 6 2/3 to 1, heat-treated pressed steel channel frame, 5⅛ in. deep, internal expanding type brakes, and metal wheels mounting 32 by 6 pneumatic cords front and rear. Wheelbase is 146 in., overall length 200 in., width at front, 31½ in., and at rear, 34 in. Top of frame is 27 in. above ground, unloaded, with ground clearance of 9 in. Equipment includes battery, starter, ammeter, electric horn, spare rim and grease gun.

Mullins Body Shows Profit of $273,000

SALEM, O., Nov. 23—The Mullins Body Corp., as of Sept. 30, 1925, showed current assets of $1,502,298 (of which cash was $185,239), and current liabilities of $264,590. There were no bank loans and no funded debt.

Net profit for the quarter ended Sept. 30, 1925, was $81,556, as compared with $43,771 in the corresponding period last year. Net profit for the first nine months of this year was $273,000, as compared with $250,465 in the corresponding period last year.

Nevada Exposition Asks Automotive Co-operation

RENO, Nov. 23—The participation of motor car manufacturers and distributors will be sought in the Nevada Transcontinental Highways Exposition to be held here June to October, 1926. The exposition is to celebrate the completion of the transcontinental highway system. The Reno Motor Car Dealers' Association is sponsoring the erection of an automotive building and hope to obtain exhibits by all principal automobile manufacturers.

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

NEW YORK, Nov. 26—Last week's most important developments in domestic financial markets were the advances in the discount rates of the Federal Reserve banks of Philadelphia and San Francisco from 3½ to 4 per cent, following similar action on the part of the Boston and Cleveland banks. All the Federal Reserve discount rates are now at 4 per cent with the exception of that of the New York bank, which remains at 3½ per cent.

COTTON CROP REPORT

A slight reduction was shown in the official cotton crop report based on condition November 14, which forecast a yield of 15,298,000 bales, as compared with 15,386,000 bales in the previous forecast.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve banks increased $3,600,000 during the week ended November 18, with gains of $1,700,000 in discounts and $2,300,000 in open market purchases, and a decrease of $700,000 in Government securities. Note circulation declined $3,200,000, while deposits increased $33,200,000 and reserves $14,600,000. The reserve ratio declined from 72.3 to 72.1 per cent.

PRICE INDICES

Fisher's index of wholesale commodity prices stood at 159.0 last week, comparing with 158.7 a week earlier, and 156.1 four weeks earlier. The wholesale price index of the Department of Labor for October was 157.6, as against 159.7 for September, and 151.9 for October last year.

CAR LOADINGS

Car loadings in the week ended November 7 numbered 1,063,322, comparing with 1,091,273 in the preceding week, and 994,504 in the corresponding period last year.

MONEY

Call loan and commercial paper rates were unchanged last week at 4½ to 5 per cent and 4¼ to 4½ per cent, respectively. Time loans were slightly firmer at 4⅞ to 5 per cent, as against a trading rate of 4⅞ per cent a week earlier.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended November 18 were 12.5 per cent larger than the total for the preceding week, and 18.3 per cent above that for the corresponding week of 1924.

BUSINESS FAILURES

Business failures reported to Bradstreet's for the week ended November 19 numbered 382, as compared with 340 in the preceding week, and 389 in the same period a year ago.

M. & A.M.A. Reports Sales Set Record

October Biggest Month for Parts and Accessories of the Year

NEW YORK, Nov. 26—October was the high month of the year in automotive parts and accessories business, as well as in car and truck production, according to figures compiled by the Motor and Accessory Manufacturers Association. A representative group of members of the association reported October shipments to customers running ahead of all months of the year including the spring peak in April.

Shipments of parts, and accessory makers for car and truck equipment were largely responsible for the tremendous October record. October deliveries for original equipment were 214 per cent of the January figure as compared with 179 per cent in September and 183 per cent in April, the previous peak of the year. The tremendous gain in original equipment business which included heavy shipments by several large manufacturers of closed bodies, wheels and kindred products, brought the total shipments for companies reporting from all divisions of the industry up to 188 per cent of January as compared with 158 per cent for September and 168 per cent for April.

Shipments Highly Satisfactory

Shipments of replacement parts to wholesalers aggregated 131 per cent of January as compared with a total in September even with January and 130 per cent in August. Accessory shipments to the trade exclusive of vehicle manufacturers aggregated 163 per cent of January as compared with 155 per cent for September and 193 per cent for April. Shipments of service equipment, that is, repair shop machinery and tools, in October ran even with January as compared with 123 per cent of January in September and 113 per cent in August.

M. & A. M. A. members reported their plants operating at an average of 82 per cent of capacity as compared with 78 per cent in September. November business is also reported to be proceeding at a record pace for this time of year and prospects for the rest of 1925 and early 1926 are excellent.

Cleveland Motorcycle Has New 4-Cylinder Unit

CLEVELAND, Nov. 25—The Cleveland Motorcycle Mfg. Co. has announced a new four-cylinder motorcycle which is now in production, the first shipments to be made late this month.

Main features of the new machine are 2 13/16 by 2 7/16 in. engine with interchangeable T-head type cylinders; forged duraluminum connecting rods; aluminum crank case; two rotary gear lubricating pumps; Bosch ignition; Schebler carbureter; single plate dry disk clutch; three speed transmission with gears of hardened chrome nickel steel; step starter; duplex frame; twist grip controls; 2¼ gal. fuel tank; 26 in. wheels equipped with 26 by 3.30 balloon tires; Splitdorf generator and Wico storage battery.

DIANA ROADSTER IN BLACK AND WHITE

ST. LOUIS, Nov. 25—A portion of the production of Diana roadsters is now being finished in black and white lacquer. The arrowhead, a feature of this model, which tips the radiator cap, broadens over the top of the hood and spreads over the cowl and along the sides of the body above the bead, is in white, giving a sharp contrast to the black body below the bead.

Austin Motor Co. Reduces Car Prices

LONDON, Nov. 20—The Austin Motor Co., Birmingham, announces price reductions on all models of 20 hp. cars, permitted, it states, by economies resulting from increased production, following greater demand. The superseded prices have been current all this year, no variation having been made during the Olympia Show period. The new and old prices are as follows:

	New	Old
Seven-passenger Phaeton	£475	£495
Seven-passenger Phaeton De Luxe	495	525
"Marlborough" Landaulet	595	675
"Carlton" Sedan	595	650
"Ascot" Sedan (with division)	620	675
"Mayfair" Limousine	715	795

Avery Co. Reorganized

PEORIA, ILL., Nov. 23—John W. McDowell, trustee in bankruptcy, who since March, 1924, has handled affairs of the Avery Co., and kept part of the plant operating in the interim, has been elected president of the new Avery Power Machinery Co., financed by a group of 65 Peoria business men, who will rehabilitate the Avery factory in the power machinery field.

A State charter was issued the new company last week, authorizing $500,000 common stock and $200,000 preferred.

This completes the disposal of the Avery Co. units, all of which are now productive. The No. 4 plant is occupied by Premier Malt Products; the large office building is used by C. W. Kent for electrical appliances' manufacture; the W. B. Wilde Co., manufacturers of Hart oil burners, is in the two threshing machine units and the Avery Power Machinery Co., has taken over all remaining plants and sites for development.

Reo Capital and Surplus Mount

Gain of More Than $3,000,000 Over 1924—Export Sales Up 100 Per Cent

LANSING, MICH., Nov. 23—With its capital and surplus for the fiscal year ended Aug. 31, 1925, $3,000,000 more than for the fiscal year ended Aug. 31, 1924, the Reo Motor Car Co., of Lansing has ended one of its best years, according to the annual report just made public. Profits, after Federal taxes, amounted to $5,422,181.85.

The annual report is for the Reo Motor Car Co. and its subsidiary companies as follows: Reo Motor Car Co., of New York; Reo Motor Car Co., of Chicago; Reo Motor Car Co., of California; Reo Motor Car Co., of Texas; Reo Motor Car Co., of Missouri, and the Reo Michigan Sales.

Increase in capital stock is reflected in working capital, which indicates a substantial gain in business. The export sales show an increase of 100 per cent, and, according to R. H. Scott, president of the company, the prospects for 1926 are unusually good.

Annual Report Items

According to the report, after paying cash dividends for the year amounting to $2,475,000, there remained for transfer to surplus approximately $3,000,000. A stock dividend of 500,000 common shares was also distributed during the year. Good-will and patents are not shown on the balance sheet as having value.

The report follows:

Assets:	
Cash on hand and in banks	$7,906,396.41
Sight drafts outstanding	772,822.21
Receivable, less reserves	5,079,935.04
Inventories	9,571,503.76
Land, buildings and equipment, less depreciation	7,189,376.91
Stock and bond investments	77,401.00
Reo Motor Car Co., of Canada, Ltd.	47,000.00

Among the liabilities listed are $2,360,610.30 in accounts payable; accrued payroll, $134,573.08; Federal and local taxes, $1,210,500.66; deferred credits, $111,584,000; miscellaneous payables, $96,705. Total capital and surplus are $26,935,503.80.

Studebaker Tapers Off Production

DETROIT, Nov. 26—The Studebaker Corp. production schedule for this month will approximate 10,000 cars, as compared with about 14,000 cars in October. The December program calls for 6,000 cars, as the plants here and at South Bend close for inventory the last half of the month.

It was said that the tapering off in production was a natural development, designed to prevent the overstocking of dealers, and was in accordance with the usual seasonal reduction.

Purchase of Graham Completed by Dodge

Former Will Continue to Operate as at Present—Foreign Expansion Seen

NEW YORK, Nov. 23—Clarence Dillon, of Dillon, Read & Co., announced today that Dodge Bros., Inc., had purchased for cash a majority interest in Graham Bros. The amount of cash could not be learned. No changes in the Graham line of 1-ton and 1½-ton trucks are contemplated, but bus production will be stressed in the new combination. Graham Bros. will continue to operate as at present, with no change in personnel. Graham trucks will continue to be sold through the Dodge dealer organization.

Frederick J. Haynes, president of Dodge Bros., Inc., has succeeded Edwin G. Wilmer as chairman of the executive committee, and Wilmer has become chairman of the board. Ray A. Graham, treasurer of Graham Bros., is now also general manager of Dodge Bros., Inc., and Joe B. and Robert C. Graham, president and vice-president of the Graham concern, have become members of the Dodge board, with H. H. Springfield, vice-president in charge of financial affairs.

Production for Ten Months, 1925

Graham Bros. has been operating as a Dodge division, but Dodge has had no financial interest in Graham business or participated in Graham earnings. Graham was a Dodge division to the extent that it used the Dodge power plant as standard equipment and marketed solely through Dodge dealers.. Graham production for the first ten months of 1925 was 16,500, or an increase of 1,420 per cent over the 1,085 produced in 1921, the first year of its power plant and sales arrangement with Dodge.

Mr. Haynes pointed out that, in addition to the unlimited bus market, the opportunity for expansion of the truck business in the foreign field is tremendous. Robert C. Graham, director of the Dodge truck and commercial car division, is now in Europe developing plans for an extensive increase of the foreign market division.

Ray A. Graham confirms the report that he and his brothers have recently been large buyers of Dodge common stock and are increasing their investment. He said that they are now among the largest Dodge stockholders.

Classification Increase Opposed by N.A.C.C.

NEW YORK, Nov. 25—Executives of Western railroads have deferred consideration of classification increase on carload shipments of automobiles which had been slated for action at their January meeting. Deferment followed representations by the Traffic Committee of the N. A. C. C., which did not object to participating with other commodities in general rate adjustments, but opposed any classification increase.

The committee showed that railroads have shared in the results of the automotive industry's policy of reducing all costs and bringing down the delivered price to the public. Of 9,913,000 carloads of manufactured and miscellaneous freight handled by the roads last year, 734,730 were carloads of automobiles and parts, while gasoline and road-building materials, tires, rubber, steel, etc., brought total automotive freight to 2,631,690 carloads. In view of these facts, the committee urged that the relative position of the automobile in rate structure should not now be enhanced.

The Western roads contended that passenger cars are classified entirely too low in view of light loading and long haul of empty cars. But the committee feels confident of making a satisfactory showing on this point should the matter of classification increase be revived later.

406,569 CARS—45,823 TRUCKS IN OCTOBER

WASHINGTON, Nov. 23—October production of motor vehicles is announced here by the Department of Commerce as 406,569 passenger cars and 45,823 trucks, of which 392,648 passenger cars and 44,129 trucks were made in the United States.

The table below is based on figures received from 180 manufacturers for recent months, 71 of which make passenger cars and 126, trucks. Figures on truck production also include fire apparatus, street sweepers and buses.

	Cars	Trucks	Total
1924			
Jan.	293,824	30,741	324,565
Feb.	343,460	32,910	376,370
Mar.	357,045	36,444	393,489
Apr.	346,405	37,948	384,353
May	286,324	35,314	321,638
June	225,079	29,067	254,146
July	244,544	26,391	270,935
Aug.	255,232	28,647	283,879
Sept.	263,528	31,960	295,488
Oct.	260,881	32,475	293,356
10 months.	2,876,322	321,897	3,198,219
Nov.	204,343	27,905	232,248
Dec.	182,099	27,542	209,641
Total	3,262,764	377,344	3,640,108
1925			
Jan.	212,921	28,141	241,062
Feb.	252,803	34,410	287,213
Mar.	332,154	45,098	377,252
Apr.	391,302	47,823	439,125
May	382,714	43,303	426,017
June	364,806	38,054	402,860
July	358,554	*41,817	*400,371
Aug.	*221,831	*37,750	*259,581
Sept.	*272,413	*60.368	*332,781
Oct.	406,569	45,823	452,392
10 months.	3,196,067	422,587	3,618,654

* Estimated.

New Clock Co. Formed

HARTFORD, CONN., Nov. 26—The Connecticut Electric Clock Co., has been succeeded by the Magnetic Clock Co. The electric clock made by this company, which is designed for use on automobiles, airplanes, motor boats and radio sets will bear the name "Magnetic."

Army Planes Have Welded Fuselages

Applications of Oxy-Acetylene Welding Discussed by Association

CHICAGO, Nov. 23—Various applications of oxy-acetylene welding were discussed at the Twenty-sixth Convention of the International Acetylene Association held at the Congress Hotel, Chicago, Nov. 18-20. J. B. Johnson, chief, materials section, engineering division, Army Air Service, Dayton, O., brought out the interesting fact that all of the new designs of airplane used by the U. S. Army have welded steel fuselages. Two types of steel tubing are used: (a) Carbon content, 0.20 to 0.30 per cent; tensile strength not less than 55,000 lb. per sq. in., yield point 36,000 lb. per sq. in.; (b) A chrome-molybdenum steel, with minimum tensile strength of 95,000 lb. per sq. in., a yield point of 60,000 lb. per sq. in., and the following chemical analysis:

	Per Cent
Carbon	0.25 to 0.35
Manganese	0.40 to 0.60
Chromium	0.80 to 1.10
Molybdenum	0.15 to 0.25

The chrome-molybdenum steel is used where high stresses are encountered, since welding causes practically no reduction in the strength of this alloy. In welding both types of tubing, a low-carbon welding rod (carbon 0.08 per cent; manganese 0.15 to 0.35; sulphur, 0.04 max.; phosphorus 0.04 max.) has been found most satisfactory.

R. W. Thomas, superintendent of steel foundry, Vulcan Iron Works, Wilkes-Barre, Pa., said the oxy-aceteylene cutting process had revolutionized plant practice. Heads or risers can now be placed wherever necessary to produce sound castings, as the oxy-acetylene cutting blow-pipe will follow a line through any thickness of metal and will operate in positions that would be absolutely inaccessible with other means. Its advantages may be summarized as: Decreases time to produce a given tonnage; reduces percentage of defectives; saves expensive crane service; and allows the engineers much greater freedom in design.

New Ford Plant Bids Submitted, but no Award

CHESTER, PA., Nov. 26—Bids were received for the proposed new plant of the Ford Motor Co. here, according to telegraphic advices from Detroit, but it was not said when the award would be announced. It is understood that some of the leading contractors in the East are among those who sent in bids.

When the Ford Co. purchased the 50-acre tract of the Merchant Shipbuilding Co. last Spring, it announced that it would erect a large assembling plant here, which would replace the Philadelphia plant of that type.

N.A.C.C. Directors Aiding Liquor Suit

Right to Seize Whiskey-Laden Car, Still Unpaid for, Disputed by Owner

NEW YORK, Nov. 23—Directors of the National Automobile Chamber of Commerce are lending their aid in the test case of the United States versus Garth Motor Co., now before the United States Supreme Court, whose decision will fix the responsibility of the owner of a motor car sold on time payments and seized for the alleged carrying of intoxicating liquor.

In this case, a car, later used by the owner to conceal liquor, was sold by the Garth Motor Co. on a conditional bill of sale. When the owner was apprehended for alleged violation of the prohibition law, $125 was still due on the car, but it was seized, despite the fact that the legal owner, the Garth Motor Co., had no knowledge of the use to which it had been put, the District Court in Northern Alabama decided in favor of the Garth concern and the Circuit Court of Appeals approved this decision. The Government then appealed to the Supreme Court.

Instructions just sent out by Prohibition Director Jones, and approved by General Andrews, Assistant Secretary of the Treasury, emphasize the fact that automobiles, unlawfully transporting intoxicating liquor are subject to seizure and forfeiture, but that no search of any vehicle may be made unless the officer has reasonable grounds for believing that such vehicle is being used in violation of the prohibition law. There is no authority for holding and searching vehicles generally.

Wild Guayule Shrubs Yield Rubber Cheaply

MARATHON, TEX., Nov. 25—Crude rubber at the rate of one ton a day is being extracted from wild guayule shrubs at the plant of the Border Rubber Co. at Marathon. This company is subsidiary of the Thomas T. Wilson Co., Inc., of New York. Its plant here was constructed in 1905 and was operated almost continuously for about nine years.

The growth of wild guayule shrubs in this part of the upper Rio Grande border region was exhausted, about 1914, but since then a new and prolific growth of the rubber-producing shrub had sprung up and there is enough of the raw material to keep the factory running for several years, it is stated.

Although crude guayule rubber sells for a less price than tree rubber, it is found that the industry is very profitable at the present high price which the product brings. Plans are on foot for seeding or planting the guayule shrubs upon one or more plantations of several thousand acres in this section of the border. The fact that it is a species of vegetation which is especially adapted to semi-arid climate and poor soil, and that no cultivation is required, makes the proposition of growing the shrubs on a large commercial scale very attractive, it is stated.

The present high price of crude rubber also has stimulated the industry in Northern Mexico. The guayule rubber factories at Torreon and other towns of that region are in regular operation, and a new plant is to be constructed at Sierra Mojada and one at San Pedro, according to information received here.

10% of Lumber in 1924 Moved by Truck

WASHINGTON, Nov. 10—Trucks were utilized in the movement of lumber, i. e. for the finished product, to the extent of handling 10 per cent of the domestic transportation of that commodity manufactured in 1924, according to a survey just completed by the U. S. Census Bureau. The Bureau's figures show that 15.6 per cent was handled by water and 74.4 per cent by rail.

Incidentally, the lumber cut in 1924 was 35,930,986,000 board feet—a decrease of 3.3 per cent under the 1923 production. Of this production, 5.7 per cent of the hardwood cut was used in the automobile industry.

Wheeler-Schebler Cuts Carburetor Outfit Price

INDIANAPOLIS, Nov. 23—The Wheeler-Schebler Carbureter Co. has announced a heavy price reduction on nine package outfits of the Model S Schebler carbureter, averaging from 25 to 30 per cent.

The reduction announcement states that, "since making the large price list reductions on the more popular outfits (in July,) not only have these sales increased, but it also has increased the sales of a number of other outfits that were not reduced at that time. The production increase on these outfits has been so good that we have been able to go into increased production on them, and accordingly the new list of price reduction is announced. Schebler replacement sales generally are increasing every day."

Pratt & Lambert, Inc., Add Unit to Plant

BUFFALO, N. Y., Nov. 23—Pratt & Lambert, Inc., 75-year-old varnish making firm, has begun the construction of a new unit to the Vitraloid plant, which will double the plant capacity. It will cost not less than $50,000. Vitraloid is a pyroxylin product. The original Vitraloid plant was placed in operation in the Spring of 1924. It is expected to have the new unit in operation early in the Spring of 1926.

Packard Applies to List Stock

DETROIT, Nov. 23—The Packard Motor Car Co. has applied to the New York Stock Exchange to list $2,377,020 additional common stock, par $10.

Kelly-Springfield Truck Sale Made

New York Group Plan Reorganization of Company and Resumption of Production

SPRINGFIELD, OHIO, Nov. 24—Purchase of the assets of the Kelly-Springfield Motor Truck Co. by a New York group of men represented by H. W. Torney, Charles C. Jamieson, Edward L. White and Philip H. Farley at a public sale conducted by P. A. Lewis, special master, Monday afternoon at the plant, for $340,000, has been approved by Judge Frank M. Krapp.

Under their bid, the purchasers acquire the real estate, building, machinery, good will and stock at the branches in Atlanta, Baltimore, Boston, Chicago, Denver, Detroit, Erie, Pa., Greensboro, N. C., Kansas City, Los Angeles, New Orleans, Omaha, Pittsburgh, St. Louis, St. Paul, San Francisco and Seattle, Wash.

Will Resume Operations

Edward L. White stated after the sale that the Kelly plant within the next ten days would begin preparations to go forward with the manufacture of trucks upon a larger scale and that the new company to be organized would have strong financial backing.

The new purchasers also acquired an issue of $1,800,000 bonds made by the Kelly-Springfield Motor Truck Co. from the Emerson McMillen estate and others and submitted a qualifying check for $15,000 for bidding.

The appointment of Receiver Pearl A. Lewis resulted from the Kelly-Springfield Co. defaulting on its $1,800,000 bonds. The action was brought by the Bankers Trust Co., of New York, which had been acting as trustee for the bondholders.

Operated Since 1906

The motor truck plant has been in operation since 1906 when it was operated by the Oscar Lear Automobile Co. Later it was purchased by the Kelly Motor Truck Co., following which there was a re-organization.

The present officers of the Kelly-Springfield Motor Truck Co. are: chairman of the board, James L. Geddes; president, A. P. Lathrop; vice-president, James Lawrence; secretary and treasurer, P. H. Diehl. Lathrop and Lawrence are from New York City and the others are residents of Springfield.

Hayden Denies Mack Negotiations

NEW YORK, Nov. 25 — Charles Hayden, of the executive committee of Mack Trucks, Inc., denies reports that Thomas L. Chadbourne will resign from that committee and declares that no negotiations between Mack and any other company are under way.

Winton Denies Co.'s Return to Car Field

States Intention of Continuing Manufacture of Engines as at Present

CLEVELAND, Nov. 26—This week's testimonial dinner to Alexander Winton, president of the Winton Engine Co., and one of the pioneer automobile builders of the United States, does not mean that Winton is planning to return to the automotive manufacturing field.

Alexander Winton, Jr., an official of the company, in commenting on the report, said: "We propose no re-entrance into the automotive field. We plan to continue the manufacture of the engines we are now turning out. The dinner was simply a testimonial to my father and had no other significance."

The dinner was given by the Cleveland Automobile Manufacturers and Dealers Association at the Winton Hotel. Five hundred manufacturers' representatives, distributors and dealers attended. Tributes to the service of the veteran automobile manufacturer were paid by Robert J. Schmunk, president of the R. J. Schmunk Co., and Charles W. Mears, for many years advertising counsellor for the Winton Co.

Among the guests at the speakers' table were: Walter F. Wright, toastmaster, and president of Walter F. Wright Co.; C. W. Hunt, vice-president of the Ohio Buick Co.; Otto Tyner, president of the Jordan Ohio Co.; Warner M. Bateman, president of the Warner M. Bateman Co.; Charles H. Scheiber, general manager of the Northern Ohio Motor Co.; and Herbert Buckman, secretary of the Cleveland Automobile Manufacturers and Dealers Association.

Velie Motors to Make Front and Rear Axles

MOLINE, ILL., Nov. 23—The Velie Motors Corp. is placing contracts and installing equipment for the manufacture of its own front and rear axles, according to announcement here. These axles will be equipped with Lockheed hydraulic four-wheel brakes, which have been standard equipment on Velie cars for some time past.

It was further said that additional announcements of other units to be manufactured by the company would be made as the work can be advanced to the point for definite action.

N. W. Malleable Casting Co. Improves Plant

MILWAUKEE, Nov. 25—Improvements totaling about $150,000 will be made at the plant of the Northwestern Malleable Casting Co., manufacturer of castings for the automobile industry. The improvements consist chiefly of a continuous annealing oven, costing about $100,000, which will take the place of twelve old-type ovens, according to W. C. McMahon, vice president. The new oven will be 202 feet long and 20 feet wide. Castings sealed in pots will be put in one end, move slowly through the oven, and will come out annealed at the other end of the device seven days later.

The present old-type ovens require eight days for the process and the uniformity of temperature changes is not so easily obtained as with the new device. The oven will be in operation in four months. A large electric traveling crane will be installed to serve the new oven and various other equipment will be added, and some remodeling of the building itself will be done.

German Tariff Fixes Car Import Duties

PARIS, Nov. 12 (*by mail*)—The new German tariff, which went into effect Oct. 1, fixes the import duty at 250 marks per 100 kilogrammes for automobiles weighing up to 4,850 pounds. From this weight to 7,054 pounds the tariff is 175 marks, and above 7,054 pounds, 150 marks per hundred kilogrammes. The rate for motor cycles is 300 marks per 100 kilogrammes.

By an agreement between Italy and Germany, Italian automobiles can be imported into Germany at the reduced tariff of 175 marks per hundred kilogrammes. The agreement, which has been drawn up by Premier Mussolini and Herr Von Neurath, is for a period of five years and will go into effect as soon as ratified by the Reichstag.

Roumania Builds Her First Flying Boat

BUCHAREST, Nov. 4 (*by mail*)—Roumania has now entered the aircraft manufacturing field with the completion recently by M. Stoika of a flying boat, constructed entirely of Roumanian material. The new flying boat is of the bi-plane type and is equipped with a 220-h.p. Heiro water-cooled engine mounted between the planes. The pilot's cockpit, accommodating two, is located in front of the leading edge of the bottom plane, while the observer's cockpit is in the extreme nose. The plane has a span of 52 ft. 3 in., a length of 34 ft. 2 in., weighs 3,960 pounds, has a speed of 100 miles per hour and a ceiling of more than 13,000 ft., with a fuel capacity enabling it to fly at cruising speed for a period of eight hours.

Curtiss Engine Ordered by British Government

BUFFALO, N. Y., Nov. 26—The Curtiss Aeroplane and Motor Co. here has begun production on a large number of Curtiss D12 aeroplane engines which are to be used by the British Government. Contract was recently signed for this order totaling nearly $600,000 with the Fairey Aviation Co., of England, which is building the planes. The motors will be used in a two-seater, high-speed type of observation plane.

Automotive Reports Spell Prosperity

Quarterly Statements and Dividend Declarations Show Thriving Trade

NEW YORK, Nov. 25—Recent financial statements and stock dividend declarations indicate continued prosperity in the automotive industry. A report of considerable importance was that of the Fisher Body Corp. and subsidiaries for the quarter ended Oct. 31.

According to the report, net income was $8,238,400 after depreciation, interest and Federal taxes, equivalent, after allowing for Fisher Body Ohio preferred dividends, to $3.36 a share on 2,400,000 shares $25 par common. This compares with $5,207,005 or $2.10 a share in the preceding quarter and $3,178,199 or $1.25 a share in the second quarter of the previous fiscal year. Net income for the six months ended Oct. 30 was $13,445,405 or $5.46 a share against $4,874,369 or $1.89 in the corresponding period of the previous year.

The Paige-Detroit Motor Co. declared a dividend of 45 cents on the common and regular quarterly dividend of 1¾ per cent on preferred. The previous rate on common was 35 cents quarterly.

The Gabriel Snubber Mfg. Co. declared an extra dividend of 62½ cents on the common stock along with the regular quarterly payment of the same amount.

Firestone Tire & Rubber Co., National City Co. and Otis Co. are offering an additional issue of $10,000,000 7 per cent cumulative preferred stock at $99 and accrued dividend to yield 7.07 per cent, the proceeds to be used to finance expansion. This will increase capitalization to $8,000,000 six per cent preferred $100 par, $18,380,900 seven per cent cumulative preferred $100 par and $358,026 shares of common.

World's 6-Day Record Captured by Fiat

PARIS, Nov. 10 (*by mail*)—Averaging 48¾ miles an hour for 144 consecutive hours, a standard 10 hp. Fiat captured the world's six-day record on Monza track, yesterday evening.

The Fiat, which had a four-cylinder engine of 1,450 cc. (88.4 cubic inches) was fitted with the Silvani head, with pushrod-operated overhead valves, and was handled by the four drivers Silvani, Botta, Mangiarotti and Belgir.

After breaking all world's records from 1,500 to 7,000 miles, thus capturing 38 world's records and 48 international records for the 1,500 cc. class, the Fiat continued after the 144th hour and came to a stop with a total distance of 7,145 miles to its credit.

The previous six-day record was held by a four-cylinder Ansaldo, which averaged 45 miles an hour on the Miramas track.

Men of the Industry and What They Are Doing

C. J. Thorne Promoted

C. J. Thorne, who has been connected with the sales department of the Turner Manufacturing Co., Kokomo, Ind., for the last four years, has been appointed general sales manager of the concern, according to an announcement from Earl Turner, president.

In the capacity of general sales manager, Mr. Thorne will be in complete charge of all sales of the company's products. The Turner line includes the Turner 2-in-1 timing unit, the Turner "Junior" Timer, special 2-in-1 models for Fordson tractors, instant foot accelerator, 2-in-1 carbureter control, all-metal visor, 2-in-1 door and throttle lever extension, and Quick-View oil gage.

Haggart Vice President

J. C. Haggart, Jr., has been elected vice president of the Republic Motor Truck Co., Inc., Alma, Mich., according to an official announcement by O. W. Hayes, president. Mr. Haggart has been associated with the Republic Truck Co. for the last nine years, both as chief engineer and assistant to the president.

Roos to Marmon

D. G. Roos has resigned as vice-president and chief engineer of the Locomobile Co. of America, and has joined the engineering staff of the Nordyke & Marmon Co., Indianapolis, Ind.

OLDS DEVELOPS SALES PROGRAM

In line with the new Oldsmobile sales development program, two new positions have been created in the sales department of Olds Motor Works, D. S. Eddins, general sales manager of the company, announces.

E. J. Shassberger, for the last four and a half years advertising manager for Oldsmobile, has been appointed in charge of territorial analyzation, and E. F. Glenny, manager of the Minneapolis branch of Oldsmobile, will be supervisor of territorial representation.

Mr. Shassberger's duties will comprise analyzation of the country from the viewpoint of Oldsmobile sales, to determine the size, number and locations of sales outlets. His findings will be used as a basis by Mr. Glenny in his work of supervising the appointment of dealers.

Irwin to Cadillac

David R. Irwin, formerly automobile editor of the Seattle Times, and more recently with the Burroughs Adding Machine Co., has joined the advertising department of the Cadillac Motor Car Co.

Schmidt Consulting Engineer

George E. Daniels, vice-president and general manager of the Locomobile Co. of America, announces the appointment of L. A. Schmidt, as consulting engineer and assistant general manager.

Mr. Schmidt's experience has been of a very broad nature, extending over both this country and Europe. He was for several years chief engineer of the Fiat in this country, and his training in the Turin, Italy, plant was of the most exacting nature.

Potter Promoted

Horace Potter, formerly a Packard salesman connected with the Detroit branch of the Packard Motor Car Co., has been named to aid in handling the custom body business of the company.

Chandler Receives Promotion

Henry T. Chandler has been appointed assistant to the president of the Vanadium Corp. of America. Mr. Chandler has been with the Vanadium Corp. since Jan., 1923, as metallurgical engineer, with headquarters in Detroit.

Burt Made Director

C. R. Burt, general manager of the Pratt & Whitney Co., Hartford, Conn., manufacturer of machine tools, has been elected a member of the board of directors and made vice-president of the company.

Will Standardize Car Fabric Items

CHICAGO, Nov. 23—At the annual meeting of the Associated Manufacturers of Fabric Auto Equipment, Inc., held here recently, plans were discussed for association advertising of certain standardized items, particularly top re-covers, back curtains, side curtains, tire covers, etc., which will be standardized and advertised as a Diamond "A" Brand.

Officers elected for the coming year were: President, Clyde Hinson, the Hinson Mfg. Co., of Waterloo, Iowa; vice-president, A. W. Connor, Cincinnati Auto Specialty Co., of Cincinnati, O.; treasurer, R. M. Thomas, Thomas Auto Top Co., of Muncie, Ind., and secretary, H. E. Zink, Hodes-Zink Mfg. Co., Fremont, O.

The next conference and meeting will be held in New York City, on March 10.

Jardine Aids National Good Roads Plans

WASHINGTON, Nov. 25—Secretary of Agriculture Jardine is credited with playing a major role in causing "the bottom to fall out of the movement in opposition to continued Government support of the National good roads program," in a statement issued here at the National headquarters of the American Automobile Association.

Thomas P. Henry, president of the A. A. A., cites a letter dealing with Federal aid recently addressed by Secretary Jardine to Harvey M. Toy, chairman of the California Highway Commission. This letter asserts that there are still big gaps in the highway system of the Nation, and only through the cooperative efforts of the Federal Government, the States and the counties can these gaps be filled.

In answer to the criticism that Federal aid thwarts the initiative and effort on the part of the States and counties, President Henry cites the fact that, whereas, up to January of this year, Federal aid funds had contributed to the construction of 58,948 miles of roads, the States and counties, without Federal aid, had paid for the construction of 62,931 miles of the same class of roads.

Hood Rubber Co. Builds

WATERTOWN, MASS., Nov. 25—The Hood Rubber Co. will start work shortly on the erection of new additions to Buildings No. 51, 52 and 53, at a cost of $80,000.

Ford Air Mail Bid at $1.08 Lb. Lowest

WASHINGTON, Nov. 23—Analysis of the bids of the Ford Motor Co. for the Detroit-Chicago and Detroit-Cleveland air mail routes shows they will be, if approved, at the lowest rates yet obtained for air mail service.

A bid was made for each route of 6¾ cents an ounce instead of 67.5 per cent of the air mail postage, postal officials today said. On that basis the rate would be $1.08 a pound, while on the percentage basis it would be approximately $2.70 a pound. The law allowed a maximum of about $3.20 a pound.

International Truck Co.'s Dec. Output 30 Daily

FORT WAYNE, IND., Nov. 25—The International Truck Co.'s plant here is now producing an average of twenty-five motor trucks daily.

Contemplated additions to the staff at the plant, which was opened about eighteen months ago, will bring the December production above the 30-truck a day mark, according to officials.

Indications are that orders on hand will necessitate a production schedule of not less than 50 trucks daily in January.

Transport Congress to Discuss Selling

Leading Figures in Industry Here and Abroad to Gather January 11-13

NEW YORK, Nov. 26—At least 500 delegates from 55 countries, or 100 more than attended the first gathering in Detroit, are expected to be present at the Second World Motor Congress at Hotel Roosevelt Jan. 11-13 during the week of the National Automobile Show.

How to build a selling organization, how to promote new business, and how to keep customers satisfied will be the chief subjects to be discussed by high executives of automobile companies in this and other lands.

Prominent Speakers on List

Among the speakers will be: K. W. Christensen, Royal Automobile Club of Denmark; E. S. Shrapnell-Smith, president, Commercial Motor Users Association of England; S. Gregorakis, S. Gregorakis & Co., Cairo, Egypt; J. B. S. Mennett, American Chamber of Commerce of Tampico, Mexico, and F. S. Mann, director, Vivian Lewis, Ltd., Adelaide, South Australia.

Sales organization will be discussed Jan. 11, with John N. Willys, chairman of the N. A. C. C. foreign trade committee, and president of Willys-Overland Co., presiding. Welcome will be extended by Col. Charles Clifton, president of the N. A. C. C. and chairman of the board of directors of the Pierce-Arrow Motor Car Co. Charles Hastings, N. A. C. C. director and president of the Hupp Motor Car Co., will discuss efficient sales administration and H. H. Bassett, president, Buick Motor Co., will tell how to develop capable salesmanship. International aspects in sales organization will be discussed by Mr. Christensen.

R. G. Graham, vice-president of Graham Bros., will preside at the luncheon on Jan. 11, and Mr. Shrapnell-Smith will introduce the discussion of world developments in motor transport. The delegates will then visit the automobile show, with H. M. Jewett, president, Paige-Detroit Motor Car Co., as chairman of the arrangements committee. The evening will be reserved for miscellaneous events planned by manufacturers.

Sales Promotion a Topic

The subject for Jan. 12 will be sales promotion, with Stewart McDonald, president, Moon Motor Car Co., as chairman. "Making Publicity Result in Sales" will be discussed by Walter P. Chrysler, president, Chrysler Corp. M. L. Pulcher, president, Federal Motor Truck Co., will talk on vocational selling in business promotion, and R. A. Stranahan, a director of the M. & A. M. A. and the A. E. A., will deliver an address on "Ask 'Em to Buy," illustrated by a film. Mr. Gregorakis will introduce the discussion of the international aspects of sales promotion.

Tuesday's luncheon will be devoted to the subject of highways, with Roy D. Chapin, vice-president, N. A. C. C. and chairman of Hudson Motor Car Co., presiding. Discussion of world trends in highways will be led by Dr. E. Esch, director, Institute for Transport Science, Cologne University, Germany.

To Study N. Y. Traffic Regulation

Tuesday afternoon delegates will have an opportunity to study methods employed in New York City to enhance safety and regulate motor traffic. This inspection will be in charge of a committee headed by George M. Graham, chairman, N. A. C. C. traffic planning and

(Continued on page 925)

Consummate Air Transport Merger

BOSTON, Nov. 23—Colonial Air Transport, Inc., has been formed here as a result of the merger of Colonial Air Lines, Inc., and Eastern Air Transport, Inc. Operations, which will include carriage of air mail and express under the U. S. post-office contract recently awarded it, will begin, it is announced, in March, 1926.

The new corporation was capitalized as follows: 3,300 shares of 8 per cent preferred stock ($100 par), and 6,600 shares common of no par value. All of the stock, according to the announcement, was underwritten.

Officers of the company are Governor Trumbull, chairman of the board; W. I. Bullard, president; L. Horner, Harris Whittemore, Jr., S. M. Fairchild, and J. T. Trippe, vice-presidents.

Hudson-Essex Output Totals 256,000 Cars

DETROIT, Nov. 26—Hudson-Essex production for 1925 up to the present, totaling 256,000 passenger cars, doubled the entire production for 1924, factory officials said today.

Of the total, approximately 153,600 were Essex, and 102,400, Hudsons. Coaches still lead in popularity, fully 90 per cent of the total number being coaches. Closed cars made up 98 per cent of the total.

Hudson-Essex output since 1922 has shown big increases. In that year 60,000 cars were produced, followed by 98,000 in 1923 and 128,000 in 1924.

Moto-Meter Net Income Increases $330,995

LONG ISLAND CITY, N. Y., Nov. 24—Net income, after taxes, for Moto-Meter Co., Inc., for nine months ended Sept. 30, 1925, was $1,496,791, as compared with $1,165,796 in the corresponding nine months last year. Earnings based on 200,000 shares, for the nine months ended Sept. 30, 1925, were $7.48 a share on Class "A" stock, against $5.82 in the corresponding period of 1924.

FINANCIAL NOTES

Marlin-Rockwell Corp.—This corporation reports gross earnings of $621,168 for the September quarter, including returns of subsidiary companies, against $214,089 for the corresponding period last year. Net profit is reported as $335,895, against a loss of $6,836, in 1924. After allowing for preferred dividends, the net profit was equal to $1.29 a share on the 222,805 shares no par value common stock. In the June quarter, earnings equalled $1.21 a share on the common stock.

For the nine months ended Sept. 30, 1925, gross earnings amounted to $1,650,601 and net profit to $903,500. After preferred dividends, net profit for the nine months was equal to $3.41 a share earned on the common.

Firestone Tire & Rubber Co.—It is announced that plans have been approved for a $500,000 extension program to the Hudson, Mass., plant of the Firestone-Apsley Co., an affiliated company, to include the erection of a five-story steel and concrete addition to the factory on land which the company recently acquired from the Boston & Maine R. R. A 20 per cent expansion is to be made at the Firestone cotton mills, a subsidiary, at Fall River, Mass. About $250,000 is to be invested in new equipment, which is expected to be ready Jan. 1, 1926. Employment for approximately 300 persons will thus be provided.

Dunlop Tire & Rubber Co. of America.—Sir Eric Geddes, chairman of the board of this company, has informed E. B. Germain, president of the company, by cable that the Dunlop interests had acquired for $13,000,000 cash a 90 per cent interest in Chas. McIntosh & Co. and all of its subsidiaries. Next to the Dunlop concern, the McIntosh company is the largest rubber company in Great Britain. The cable stated further that the McIntosh Co. is "showing a good business and on refinancing gives considerable added strength to ourselves."

Hayes Wheel Co.—This company, for the ten months ended Oct. 31, reports net income of $1,683,563, after all expenses and charges, but before Federal tax reserve. This is equal to $7.46 a share earned on the 197,044 shares no par value common stock outstanding, after allowing for preferred dividends. In the same period last year, the company earned $2.63 a share on the common stock.

Yellow Truck & Coach Manufacturing Co.—This company has declared initial quarterly dividend of 18¾ cents on Class B stock and 1¾ cents on preferred, both payable Jan. 2 to holders recorded Dec. 15.

Chicago Yellow Cab Co., Inc.—This company last week declared three regular monthly dividends of 33 1/3 cents each on the capital stock, payable January, February and March 1, 1926, to holders of record of the 20th of each preceding month.

Mason Tire & Rubber Co.—This company reports, for the nine months ended Sept. 30, 1925, gross profits of $495,771, after expenses, etc., but before interest. Net profits were $126,939, after interest, reserves for depreciation, etc.

Borg & Beck—This company has declared extra dividend of 25 cents in addition to regular quarterly of 50 cents payable Jan. 1 to stock recorded Dec. 18.

Automotive Tax Cut Due About March 1

House Committee Rejects Plan for Retroactive Tax—Fight Ahead

WASHINGTON, Nov. 25—Four decisions affecting the automobile industry were announced this week by the House Ways and Means Committee in its completed draft of the new revenue bill which carries a total of $356,236,000 tax reduction, of which $70,537,000 is cut from the taxes paid by the automobile users of the country.

The four decisions were: (1) rejection of the automobile industry's application for a retroactive tax, by which it would be possible to rebate to the 40,000 dealers throughout the country on cars which they have in stock on the date the bill becomes effective; (2) announcement that the tax will become effective on the date of its adoption; (3) parts and accessories, sold with passenger cars, are included as a part of the car and taxed 3 per cent, and (4) automobiles, exported to American possessions are exempt from the 3 per cent excise tax.

Present indications are that the new tax measure will be introduced on December 7, get its first consideration on December 9, under a unanimous agreement by the Administration and Congressional leaders and will probably be disposed of in the House within two weeks. The Senate leaders believe that its final passage can be effected by March 1.

A fight over the automobile taxes on the floor of the House appears to be certain, as the Democrats, led by Congressman Oldfield, of Arkansas, have declared their intention of insisting on complete repeal of all automobile taxes. The only reason that the 3 per cent tax on passenger cars is left, they charge, is to enable Republicans to make political capital out of a later reduction in automobile taxes in the 1927 revenue bill. The Democrats aver that the 3 per cent tax on passenger cars will only net the Treasury $56,484,000, and that the country at large is tired of the so-called luxury tax which was passed as a war time measure.

Pan America Can Employ Many Trucks

DETROIT, Nov. 24—Improved highway programs now under way in many of the Central and South American countries together with poor railway transportation facilities makes the prospects for the sale of American motor trucks in those countries unusually bright for 1926.

This is the opinion of W. Ward Mohun, export manager of the Federal Motor Truck Co., who recently returned from a trip through the important countries of Central and South America.

"Pan America needs transportation desperately," Mr. Mohun said, "because their railroads are inadequate, and this paves the way for the motor truck. Every indication points to an increase in motor truck shipments to these countries within the next year. A portion of the surplus motor trucks in this country should be readily absorbed by Pan American consumption."

Central Brass Builds

SPRINGFIELD, O., Nov. 23—Construction of a new warehouse at the plant of the Central Brass and Fixture Co., manufacturer of bumpers and automobile accessories, has been authorized and the contract let.

This will relieve the main plant so that additional facilities can be obtained for manufacturing purposes.

Car Fatalities Show 1925 Decrease

Secretary Hoover's Committee Reports Improvement Over 1924

WASHINGTON, Nov. 25—The Nation-wide campaign to reduce grade crossing fatalities has met with partial success according to the report given out here this week by Secretary Hoover's Committee on Statistics of the National Conference of Street and Highway Safety.

The actual figures presented, tending to show results in the campaign, were as follows: In the first eight months of this year there were 3,094 grade crossing accidents, in which automobiles figured, compared with 3,153 in the same period last year. The number of deaths in the first eight months this year was 1,324, as compared with 1,359 last year, while the number of injured totaled 3,650 this year, as compared with 4,026 last year.

Goodell-Pratt Co. Buys A. F. Way Co.

GREENFIELD, MASS., Nov. 23—The Goodell-Pratt Co., toolsmiths, announce that it has purchased the electric drill business of the A. F. Way Co., of Hartford, Conn. The drills embody a number of patented features, and have been used in many large manufacturing plants of the East in the three years they have been on the market.

At present, the line consists of only two sizes of drills. Others, however, have been developed and will be ready within a short time, according to company officials.

Developments of the Week in Leading Motor Stocks

NEW YORK, Nov. 25—The decline in the motor stocks approached the stage of demoralization at the opening of the week, with the result that banking support made its appearance. Losses of from 15 up to nearly 90 points in individual issues indicate not only the undoing of an over-extended public speculative position, but must, in large degree, have brought prices to a level comparable with value. There was a good deal of buying of the semi-investment character in evidence and this is the class of buying which must, in the final analysis, absorb the flood of liquidation and turn the market. Unquestionably, some very big people have been hurt seriously in the break, which has spelt ruin to many of the smaller fry. Otto Kahn, some years ago, in talking with the writer, following a similar market episode, said: "The public comes into Wall Street in person, by mail or telegraph, on a debauch. The inevitable happens and, in the painful process of sobering up, Wall Street is blamed." As on so many other occasions, this is what has occurred. Reason was thrown to the winds, and the restoration to normal is painful. The unfortunate part of it is that the lesson will not have been learned.

The raising of the re-discount rate by the several banks of the Federal Reserve System was an excuse, and not a reason, for the decline. The crash would have occurred in any event, simply because the market had got to a point where speculators could no longer buy stock; and sell them to other speculators at a profit. The public had all it could carry and, when this buying power was exhausted, the inevitable occurred.

All this has not much to do with such commonplaces as earnings and values, but these latter have been discharged, and only now are beginning again to be effective in quoted prices. The pendulum has swung too far and a recovery seems in order. After such a recovery we are apt to find that sober consideration of the fundamentals of industry will replace speculative hysteria.

The closing of plants for inventory taking, together with some seasonal curtailment of operations does not indicate any change in the prospects for the industry during the first quarter, at least, of next year.

It may be assumed that executives planning larger production know that the market for their product will exist. Some consideration of the elements of supply and demand, of costs and profits, presently will replace the various absurd rumors which have been used to further operations of speculators. H. H. S.

American Expansion of Rolls-Royce Seen

Managing Director Predicts Large Increase in Output With Future Bright

SPRINGFIELD, MASS., Nov. 23—Claude Johnson, managing director of Rolls-Royce, Ltd., of Derby, Eng., forecast a rapid expansion of production by Rolls-Royce of America, Inc., at its plant here.

Speaking at a luncheon following his inspection of the works Nov. 19, he said: "The day when this company will be employed in the manufacture of airplane motors must surely come. I am making no extravagant claim when I say that in five years there will be 5000 employes at the Springfield works, the same number as at present at the Derby works, and in ten years there will be 10,000."

Distinguished Guests at Plant

Among those who joined in the inspection of the plant and later attended the luncheon were: Henry J. Fuller, president of Rolls-Royce of America, Inc., New York; A. P. Spence and K. K. Mackenzie, directors of Rolls-Royce, New York; J. E. Aldred, President of Aldred & Co., New York; W. E. Hosac, vice-president of Rolls-Royce of America; L. J. Belnap, former president of Rolls-Royce of America, Montreal; Harry C. Beaver, vice president and treasurer in charge of the Springfield works; W. S. Brewster, head of the Brewster Automobile Co., New York and Long Island City; E. C. Mayo, president of Gorham Mfg. Co., Providence; Arthur T. Murray, president of the American Bosch Magneto Corp., Springfield; A. H. Chapin, president of the Moore Drop Forging Co., Springfield, and William M. Pratt, president of the Goodell-Pratt Co., Greenfield, Mass.

The plant here is now running at full capacity and orders are said to be considerably in excess of the rate of output.

Cleveland Output 91% Above Oct., 1924

CLEVELAND, Nov. 23—Production records almost doubling 1924 figures were set up in October by the Cleveland Automobile Co., manufacturer of Cleveland Six motor cars, according to reports just made public here.

October production was 91 per cent greater than production in the same month in 1924, the reports showed. Officials said the company was enjoying record-breaking sales.

The report also showed that the number of Cleveland cars shipped up to November 1, 1925, was 55 per cent greater than shipments during the same period last year, and 42¼ per cent greater than shipments in all of 1924.

The increased volume of sales is not alone in the domestic field, as export shipments are showing large increases, officials said.

AUTOMOTIVE PATENT APPLICATIONS LEAD

WASHINGTON, Nov. 25—Applications for patents on appliances and accessories incident to the automotive industry led all other classes of patent applications in the fiscal year of 1925, according to the annual report of Thomas E. Robertson, Commissioner of Patents, just made to Secretary Hoover.

There were a total of 103,705 applications made in the year, of which 3,980, or almost 4 per cent, were for some accessory or appliance to go on an automobile. In 1924, there were 99,724 patents applied for.

Largely due to the reorganization of the patent office by Secretary Hoover, the delay in securing action on a patent has been cut from five to three months. A. J. Brosseau was chairman of the industrial committee. Approximately one-half of the applications for patents are granted.

Transport Congress to Discuss Selling

(Continued from page 923)

safety committee, and vice-president, Chandler Motor Car Co. That night delegates will be invited to attend the N. A. C. C. banquet.

Wednesday morning's session will be devoted to service selling and E. V. Rickenbacker, vice-president, Rickenbacker Motor Sales Co., will preside. "Organizing for Service" will be the topic assigned to Alvan Macauley, president, Packard Motor Car Co. "The Shop of Efficient Service" will be discussed by S. F. Black, of the M. & A. M. A. and the A. E. A., and president of Black & Decker Mfg. Co. Alfred P. Sloan, Jr., president, General Motors Corp., will discuss rewards of serviceable selling and the international viewpoint will be stated by Mr. Mennett.

Finance will be the topic of the Wednesday luncheon with Fred J. Haynes, president, Dodge Bros., Inc., in the chair.

Motor Bus Problems

Wednesday afternoon delegates will be shown actual methods of maintenance of equipment, management, training of personnel and operation of motor buses along modern lines.

Wednesday night the delegates will have an opportunity to attend the M. & A. M. A. banquet, of which E. P. Chalfant, president of the association, and of Gill Manufacturing Co., will be chairman.

Car Show at Copenhagen

COPENHAGEN, DENMARK, Nov. 10—An international automobile show will be held here from Feb. 13 to Mar. 15 next. All classes of motor vehicles and farm tractors, as well as parts and accessories, will be admitted.

Advance of $2 a Ton in Sheets Announced

Volume of Steel Business is Well Maintained—Copper in Keen Demand

NEW YORK, Nov. 26—The steel market enters upon the year's final month under very much the same conditions as those which surrounded it in December, 1924. Then, as now, the volume of demand exceeded producers' normal expectations during the year's closing period, and the market is beginning to alter its notion that the year's closing months are ordinarily dull.

Altered buying methods are responsible for the change. Contracts for long-deferred deliveries have largely gone out of fashion, and this has brought about a correspondingly quicker response of market prices to the aggregate demand although it may be spread over many small orders.

Announcement by the leading interest's sheet-rolling subsidiary of the opening of its books for first quarter, 1926, deliveries at advances of $2 per ton on sheets has fortified the position of those independents who urged their customers some weeks ago to cover their wants at the then prevailing prices, assuring them that price advances would become general within a short time. It appears, however, that some business for full-finished automobile sheets is still being booked at 4.40c, and announcement of the American Sheet & Tin Plate Co.'s first quarter, 1926, quotation of 4.50c was apparently preceded by the placing of considerable business at the 4.40c level. The present sheet bar market is nominally $35, but in some quarters $36 has been named in the last few days.

The Metal Markets

Pig Iron—The market has turned extremely dull, but lack of activity has caused little change in the attitude of blast furnace interests, and firmness is noted in virtually all of the markets.

Aluminum—Most automotive consumers appear to have covered their requirements for the first quarter of the coming year. Importers' quotations are on a parity with those of the sole domestic producer. The volume of arrivals from abroad is unchanged from the rate of shipments which has been in evidence for some time. Secondary metal and scrap continue scarce and rather strong.

Copper—The market is just about holding its own. Competition among manufacturers of wrought brass and copper parts for automotive consumption continues keen. Prices, however, show greater steadiness.

Tin—When the East Indies producers let tin go at somewhat more reasonable levels, the "bulls" on the London Metal Exchange come to the rescue and drive prices higher. Domestic consumption is too heavy to make possible retaliation on the part of American buyers.

Coming Events

SHOWS

Nov. 26 - Dec. 6 — Berlin, Germany, Annual Automobile Show in the Kaiserdamm.

Dec. 5-16 — Brussels, Annual Automotive Show, Palais du Cinquantenaire.

Dec. 7-20 — Buenos Aires, 8th Annual Argentine Automobile Show.

Jan. 9-16—New York, N.A.C.C. National Annual Show, Grand Central Palace.

Jan. 18-23—New York, Twelfth National Motorcycle, Bicycle and Accessory Show, New Madison Square Garden.

Jan. 22-30—National Motor Boat Show, Grand Central Palace, New York.

Jan. 30-Feb. 6 — Chicago N.A.C.C. National Annual Show, Coliseum.

Jan. 30-Feb. 6—Chicago, Automobile Salon, Hotel Drake.

Feb. 13-Mar. 15 — International Automobile Show, Copenhagen, Denmark.

NATIONAL SHOW WEEK EVENTS

Jan. 11—Atlantic District, National Automotive Dealers Association, East Ballroom, Hotel Commodore, 10 A. M.-5 P. M.

Jan. 12 — National Automobile Chamber of Commerce Dinner, Hotel Commodore, 6.30 P. M.

Jan. 13 — Franklin Dealers Luncheon, Hotel Commodore, 1 P. M.

CONVENTIONS

Nov. 30-Dec. 4 — New York, American Society of Mechanical Engineers, Engineering Societies Bldg., 29 W. 39th St.

Dec. 3-4—Washington, Highway Research, 5th Annual Meeting.

Jan. 11-13—New York, Second World Motor Transport Congress, Roosevelt Hotel.

Jan. 21-22—Hotel Statler, Buffalo, N. Y., Winter Sectional Meeting, American Society for Steel Treating.

Feb. 2-3—Congress Hotel, Chicago, Automotive Electric Service Association.

S.A.E. MEETINGS

National

Jan. 14 — New York, Annual Dinner, Hotel Astor.

Jan. 26-29 — Detroit, Annual Meeting.

Sectional

Dec. 10—Indianapolis.

Coming Feature Issues of Chilton Class Journal Publications

January 1—Automobile Trade Journal —National Shows Number.

January 7—Motor Age — National Shows Number.

January 14—Motor World Wholesale—New York Show Report.

February 4—Motor Age — Chicago Show Number.

February 4—Motor World Wholesale —Chicago Show Report.

February 18—Automotive Industries—Statistical Issue.

Fewer Tire Sizes Urged on N.T.D.A.

Sixth Annual Convention Considers Government's Recent Survey

ST. LOUIS, Nov. 23—Addresses by two representatives of the Department of Commerce were outstanding features of the Sixth Annual Convention of the National Tire Dealers' Association held at the Chase Hotel here Tuesday, Wednesday and Thursday of last week. Attending the convention were about 300 tire dealers and a number of representatives of manufacturing concerns connected with the tire industry.

The Department of Commerce representatives who spoke were R. M. Hudson, chief of the Division of Simplified Practice, and Paul L. Palmerton, chief of the Rubber Division. Mr. Hudson distributed to the tire men copies of his report on fewer tire sizes, and then discussed some of the advantages of simplification in the varieties and sizes of tires.

Tires in Stock 56.6 Per Dealer

Interesting facts about the makeup of the retail tire trade were given by Mr. Palmerton as a result of his analysis of the survey made by his division of the Department of Commerce. This survey revealed approximately 100,000 dealers selling tires at retail, of which 37,000 answered a questionnaire. The average number of tires in stock per dealer was 56.6 as compared with 53.6 on Oct. 1, 1924. However, 74 per cent of the dealers had less than 50 tires in stock.

Mr. Palmerton's report was the basis of most of the discussion which took place at the executive session of the convention, at which only members of the association were permitted to be present. This discussion had to do altogether with the relationship between the tire manufacturer and the dealer, interpreted in the light of Mr. Palmerton's survey, and with grievances of the dealers against the manufacturer, and not at all with practical methods of merchandising more tires and improving the dealer's own business methods, so that he might make a more satisfactory profit on the same volume of business.

At a banquet Wednesday night, Orville Livingston, secretary of the St. Louis Credit Men's Association, spoke on "Cause and Effect of Time Payments in the Retail Tire Business." He took the stand that the instalment plan of selling tires was not justified except in special cases and expressed the opinion that extension of credit is becoming entirely too liberal.

The convention delegates and visitors were taken Wednesday afternoon for a tour of the tire factory of the Cupples Co., and for a sight-seeing tour of the city.

Officers elected for 1926 were: Herbert A. Ruhnke, Milwaukee, president; H. V. Eva, Duluth, vice-president; Geo. J. Burger, secretary-treasurer.

National Air Transport Buys Curtiss Planes

BUFFALO, N. Y., Nov. 26—National Air Transport, Inc., has closed a contract with the Curtiss Aeroplane and Motor Co. for ten aeroplanes of the Curtiss Carrier Pigeon type, to be equipped with Liberty motors. The first of these planes is in construction at Curtiss' plant here.

It is reported that the planes are to be used in a night air service between New York and Cleveland and other points, carrying freight.

There are several interesting innovations in this machine. The pilot, for instance, sits well back in the fuselage of the machine.

Rubber Factories Resume Full Time

Akron Companies Report Gain in Orders—No Deferred Payment Orders

AKRON, Nov. 26—Many departments in Akron rubber factories are resuming full time schedules this week, after operating for five days a week since about Oct. 1.

There was a seasonal decline in sales at the opening of the Fall season, when "Spring dating" was abolished, but in the last few weeks the demand for tires, both in this country and abroad, has been greater than was anticipated. Sales to automobile manufacturers of original tire equipment have been particularly heavy, due to a record-breaking motor car production.

Although none of the tire manufacturers are accepting deferred payment orders, as was the case last year, dealer business is reported to be good. Many distributors, whose stocks are low, are ordering large shipments. From now on tire production is expected to increase steadily, reaching peak levels shortly after the first of the year. Most of the tire companies have been running about 80 per cent of capacity in the last two months.

Martin-Parry Builds

NEW ORLEANS, Nov. 26—J. W. Langley, city building commissioner of Jackson, Miss., recently issued six building permits to the contractors of the Martin-Parry Corp., wooden automobile body builder, for the erection of buildings on their new factory site in Jackson, to cost approximately $100,000.

The permit calls for starting construction within 30 days.

AUTOMOTIVE INDUSTRIES

VOLUME 53 — Philadelphia, Thursday, December 3, 1925 — NUMBER 23

Speaking of 1926—

Looks Like Another Good Year *if Factories Do Not Overproduce!*

Possibility of car manufacturers allowing production to exceed demand is chief cloud on business horizon now. Some of the reasons why this danger exists.

By Norman G. Shidle

THERE is a strong likelihood that automotive business will continue good throughout the first six months of 1926. It may go on without interruption after that as well, but discussion of conditions for more than six months ahead at best can be only very general in character.

Fundamental business conditions in the country continue to be sound. Export fields are developing apace. The public is showing no disposition to shut down on buying either of automotive or other products. Money rates have risen slightly, with the result that the danger of inflation is lessened and the prospects of continued stability increased.

These are the favorable factors which make likely a continuance of automotive prosperity for some time to come.

Despite the generally favorable outlook, a number of very definite dangers lurk in automotive conditions as they stand today. Recognition of them need not involve pessimism about the future. But recognized those dangers must be if intelligent action is to be taken in the next few months.

Here are some of the soft-spots:

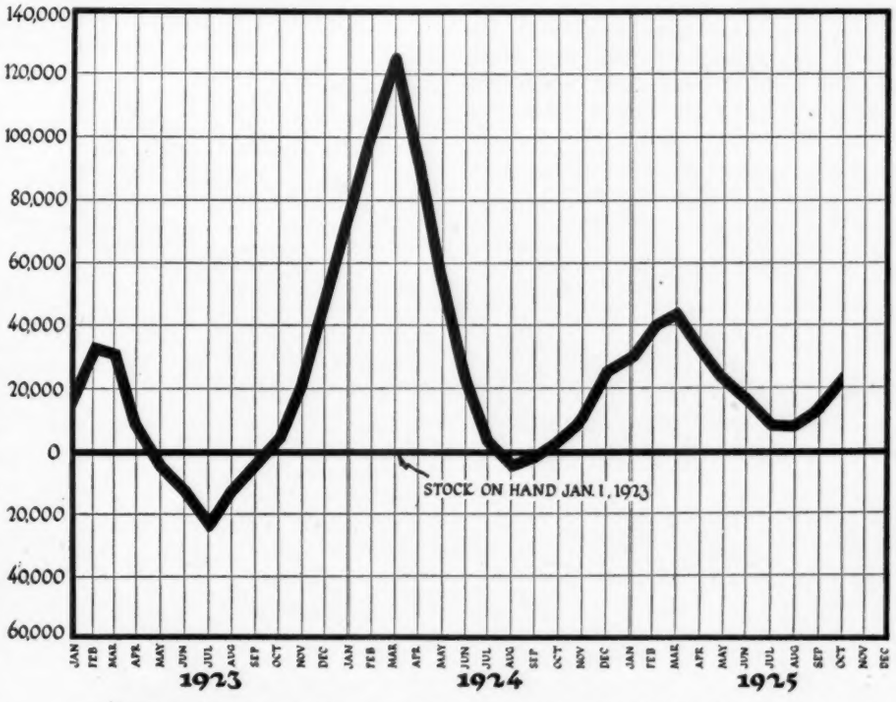
1. Extremely liberal terms in retail financing. Terms tending to get even more liberal at present, rather than to be brought to a more conservative basis.

2. Used car sales slowing up, partly on account of the liberal terms on which new cars can be bought.

3. Plant capacity for the industry as a whole has been increased materially in 1925. Necessity of keeping production up and overhead down offers strong temptation to many manufacturers to continue production at a high rate for a considerable period after sales have fallen off.

4. Dealer car stocks increasing rapidly, although not yet unwieldy.

5. Combination of increasing dealer stocks and desire to hold output to high levels may result in price cuts after the first of the year, the probable result of which would be to spoil to some extent the merchan-



THE above chart shows the monthly change in stocks of cars and trucks carried by General Motors dealers as compared with the January 1, 1923, level. It is based on official figures issued monthly by that corporation showing its sales to dealers and its dealers' sales to users.

dising value of the 1926 National Automotive Shows.

To list these dangers does not mean to predict their development to an acute stage. But the whole question of automotive prosperity for the first half of 1926, probably rests on how this single question is answered by the industry in the next four months:

"Will the factories overproduce?"

Nearly all of the merchandising evils which have beset the atuomotive industry in the past and which are hiding around the corner of 1926, result very directly from the single circumstance of overproduction.

Price wars, wild used car trading, overstocks of new and used cars on retailers' floors, dissatisfied dealers, unsound instalment terms and all the rest of that unsavory tribe of automotive marketing bugbears follow in the royal train of King Overproduction.

Fight to Régain Throne

That deposed monarch is likely to make a fight to regain his throne in the next few months. He will be encouraged by Increased Plant Capacity and Unthinking Optimism. He ruled supreme in the Spring of 1924, but went down in the revolution which took place in the Summer of that year. He's been in hiding ever since. Many have believed him to be dead. But latest reports indicate clearly that he is sulking about the outskirts of the industry again looking for a way back to dominance. In an unofficial interview, King Overproduction is said to have stated:

"If I can get the full support of one or two manufacturers, I'll soon have the whole industry in my power again. I don't need any popular majority. This democracy stuff is all bunk anyhow. If just a couple of my friends will let me into their plants again, within two months I'll be able to force the whole industry to take me to its bosom again.

"And I don't mind adding—not for publication, of course—that when I get the manufacturers where I want them next time, they'll feel the effects of my ire for more months than any of their engines have cylinders. This bird Retail Demand has been too much for me all this Spring and Summer, but he always gets weaker in the Winter. Of course, I'm not afraid of him any time, y'understand, but why get into a hard fight when you know you can win under wraps by waiting a while. A lot of the wiseacres have been saying I'm all through. Well, I'm not of a boastful nature, but I've whipped my weight in statistical predictions more than once and there's life in the old boy yet.

"I've gotta go now, but I'm likely to be back in the royal purple before many weeks have passed. Just cram that down your old dudeen."

We can't guarantee the authenticity of that interview, but it's worth thinking about anyhow while taking a look at the outstanding points of interest in the current automotive situation.

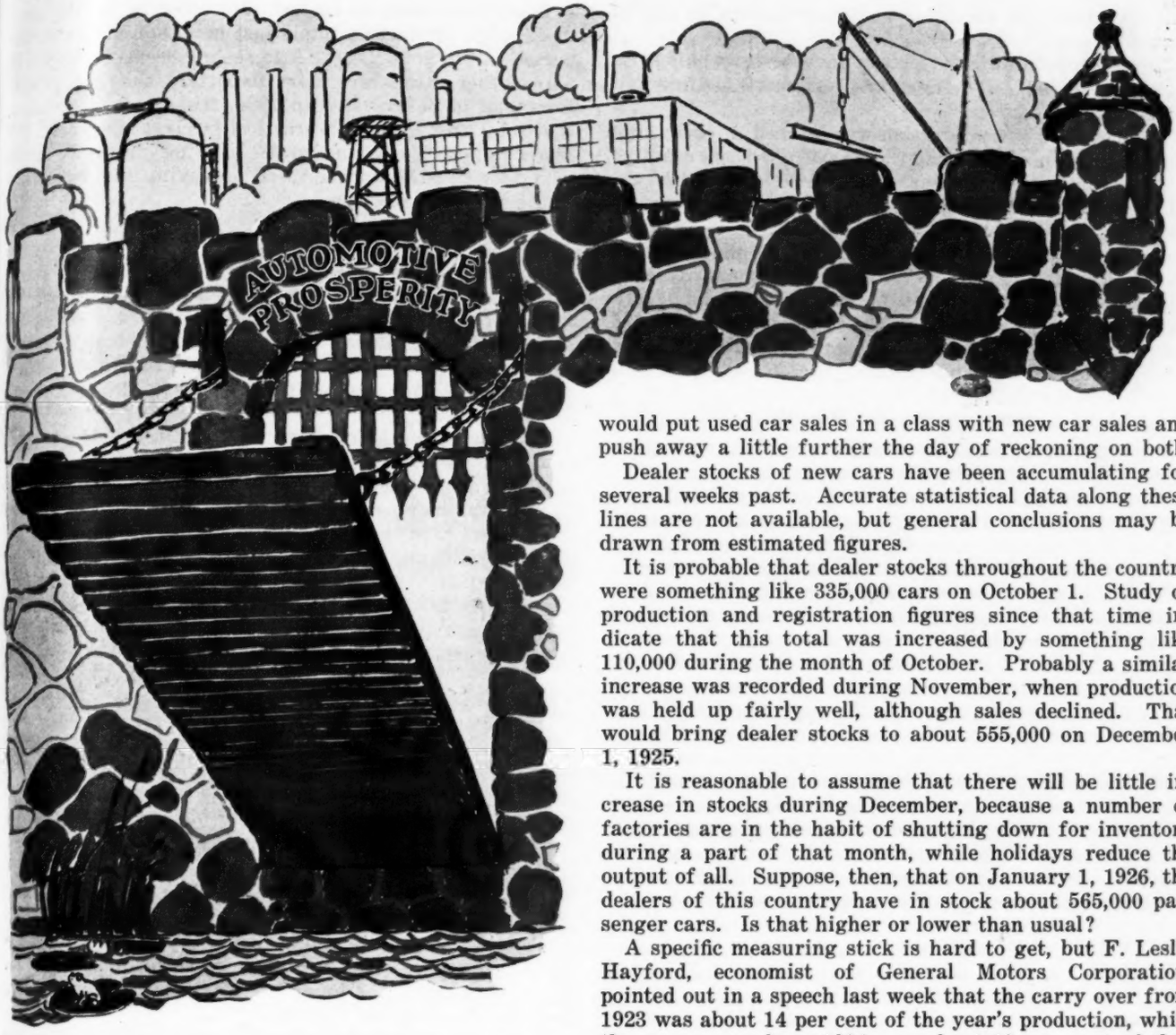
Retail financing terms are becoming more rather than less liberal. The question of rates is occupying most of the attention of the finance companies at present, but in the long run terms and not rates will be the important factor from the standpoint of the car producer. Spread over a period of 12 months, a difference in rates of $15 isn't a vital matter from an economic standpoint, however serious it may be to the profit of a finance company.

But extremely low down payments and extremely long terms may well mean a bad backing up of cars just at the time when it would do most harm to the manufacturer.

And so the fight on down payments and terms, centered for the moment on the Pacific Coast, promises to be one of the decisive merchandising battles of the near future. If sound practice and reasonably conservative methods win out, the entire retail financing structure may be stabilized within the near future. Otherwise an instalment term war of serious magnitude may be precipitated with the entire country as a battleground and the 1926 stability of the industry as a victim. Financing terms which may be sound from the immediate profit standpoint

Can He "Come Back"?

King Overproduction has gathered about him a few of his faithful followers and is staging an assault on the walls of Automotive Prosperity. Dethroned after his famous orgy of 1923-24, he has since been in retirement and disgrace, with peace and prosperity reigning in the industry. But here he is again, casting a shadow over the situation. He should be repulsed in this new attempt to overcome the forces of Conservatism and Reason.



of the finance companies operating them may at the same time be unsound from the standpoint of the automobile manufacturer looking to permanent business and long-swing stability for himself and his dealers.

A strong stand for conservative financing terms is certain to be made by important elements in the automotive industry in the next six months. Manufacturers as a whole realize fully the importance of this feature of their merchandising effort. And there is every indication that conditions in this respect will be better at the end of next year than at the present time. But to fail to recognize the imminence of a serious fight along these lines would be merely to bury one's head in the sand.

Used cars in many parts of the country are not moving as satisfactorily as are new cars. Very liberal financing terms are available on new cars and not on used cars. Many dealers are finding it difficult to move used cars as a result. Some of them are demanding from the finance companies more liberal terms on used cars. Conservative opinion in the manufacturing and financing field is pointing out that what is needed is not more liberal used car terms but more conservative new car terms.

But new car terms aren't conservative, the dealer answers, and don't seem likely to be.

What will be the answer?

Probably more liberal used car terms. But that is not, of course, a final or a fundamental answer. It simply would put used car sales in a class with new car sales and push away a little further the day of reckoning on both.

Dealer stocks of new cars have been accumulating for several weeks past. Accurate statistical data along these lines are not available, but general conclusions may be drawn from estimated figures.

It is probable that dealer stocks throughout the country were something like 335,000 cars on October 1. Study of production and registration figures since that time indicate that this total was increased by something like 110,000 during the month of October. Probably a similar increase was recorded during November, when production was held up fairly well, although sales declined. That would bring dealer stocks to about 555,000 on December 1, 1925.

It is reasonable to assume that there will be little increase in stocks during December, because a number of factories are in the habit of shutting down for inventory during a part of that month, while holidays reduce the output of all. Suppose, then, that on January 1, 1926, the dealers of this country have in stock about 565,000 passenger cars. Is that higher or lower than usual?

A specific measuring stick is hard to get, but F. Leslie Hayford, economist of General Motors Corporation, pointed out in a speech last week that the carry over from 1923 was about 14 per cent of the year's production, while the carry over from 1924 was about 13 per cent of that year's production.

Carry Over 15% of Output

Assuming a total passenger car output of about 3,700,000 for 1925, that would mean that the carry over this year will be a little over 15 per cent of the year's output.

That means that dealer new car stocks this January probably will be slightly higher than they were last year, but does not necessarily mean that there has been any overstocking. Several important factories, having analyzed past experience, believe that dealer stocks in most sections of the country should be about 15 per cent of the current production rate, which would bear out the idea that dealer stocks at the beginning of 1925 were slightly sub-normal.

The proper size for dealer stocks, of course, depends on what future sales are likely to be rather than on what past sales have been. If it be assumed that 1926 business will be at least as large as that of 1924 and perhaps as large as that of 1925,, it becomes evident that there has as yet been no serious overstocking of dealers, taking the industry as a whole, and that all branches of the industry will enter 1926 in sound order.

Opinions gathered recently from a number of leaders in the industry indicate that every effort will be made to maintain this condition of balance. Influences exist which tend to disturb it, to be sure, but the lessons of the past

still are strong in the minds of most leaders in the industry.

The lesson of unwieldy factory inventories was learned back in 1920-1921. The mistakes made at that time have not been repeated.

The lesson of overproduction was learned in early 1924. The mistakes made at that time have not been repeated.

The profit-making power of balanced production and sales has been learned by experience in the last year and a half. There is every reason for these successful policies to be continued and every reason to believe that they will be. E. S. Jordan in a recent published statement expresses a manufacturer's view when he says: "Automobile production will reach its highest peak in the spring of 1926, but the manufacturers are intelligent enough not to overproduce; that is, we think we are."

Summarizing the Results

Summarizing automotive results for the year, the Cleveland Trust Co. Bulletin of Nov. 15 says:

"The result has been a year of great output and large profits. It has been due in part to national prosperity, in part to the enlightened policy of the manufacturers who have used mass production methods to offer better cars at lower prices, and in part to our great gold imports of 1924, which resulted in cheap credit and made possible the new instalment financing plans.

"It does not follow, however," the Bulletin continues, "that because 1925 has been a year of great profits for the motor companies, and sustained demand from the public, that 1926 will produce the same results in even greater measure. It does not now appear that the companies have much to offer in the way of important improvements in the next year's cars. Any considerable advance in interest rates would at once result in higher charges for financing retail purchases. The matter of profits to the makers depends on continued sales in huge volume and conditions appear less favorable in that respect than they were a year ago."

NEXT WEEK—
Automotive Stock Values

EVERYBODY today is interested in automotive stocks and the underlying factors on which their values are based.

Beginning in next's issue, *Automotive Industries* will present a series of articles on this subject, each article scrutinizing the financial structure and business history of an important car or truck producing company.

The purpose of the series is to give the reader a real fact-and-figure picture of the financial structure of the industry as a whole and this is accomplished by selecting for analysis companies which are representative in character.

One thing the articles show very definitely is that the confidence of the public in the investment value of motor stocks has not been misplaced. Motor stocks generally were undervalued by investors for a good many years, but the situation has changed recently. Anyone following the forthcoming series will understand why.

Executives seem to be less interested in talking about next year's production totals just now than at any similar period in previous years. The feeling seems to be that so many other things are more important than the production total to be expected in 1926, that speculations about that total aren't of much practical interest right now. The financing, used car and merchandising problems of the next four months appear to be occupying the foreground in the minds of executives.

Not Predicting New Records

Most of those who are guessing about 1926 total output are not predicting new records. They will be satisfied with a repetition of 1925, or even of 1924. We've had guesses ranging all the way from 3,500,000 to 4,500,000 for total motor vehicle production in 1926. There shouldn't be any great suprise if it dropped below 4,000,000.

Perhaps never before has the industry held so much power in its own hands to determine whether or not it shall go ahead steadily during the next twelve months. Sound, stabilizing action as regards production activities in the next three months seem almost certain to result in good business and well balanced automotive conditions for the year 1926. And the strongest forces in the industry are at work to keep the automotive ship sailing on an even keel through the first quarter of 1926. To a reasonably optimistic observer it looks like a pleasant and safe voyage.

SOME tests to determine the best materials for the best form of mounting rings for self-aligning ball bearings are described in an article in *Der Motorwagen*, by W. Heinen, manager of the experimental department of the Rheinland Machine Works. In order that the self-aligning feature may be effective, the friction between the outer race and the mounting or supporting ring must not be too great. It is, of course, obvious that the smoother the contact surfaces, the smaller the friction. As regards materials, supporting rings were made of medium carbon steel, cast iron, bronze and hardened steel. In some of the rings a recess or relief was turned, of one-half the width of the ring, with the object of determining whether this had any effect on the friction.

It was found that relieving the supporting surface had practically no effect. Rings made of hardened steel showed about 40 per cent less friction than rings of low carbon steel, 35 per cent less than cast iron and 30 per cent less than bronze. The contact surfaces were well greased when the tests were made. From the results the conclusion is drawn that hardened steel is by far the best material for the mounting rings.

DURING the first eight months of the current year, when the embargo was nominally still in force, Germany imported 109,811 double hundredweights (212 lb.) of automobiles. Most of the cars came from the U. S., namely, 2,478, while France furnished 1453, Austria 1092, Italy 1063 and Denmark 795, the latter probably, cars assembled from American parts. German exports dropped to 32,749 double hundredweights during the same period, the best customer of the German automobile industry being Spain, which took 153 cars, followed by Poland, 137; Holland 126; Russia, 96; the Balkans, 92; British South Africa, 90; Switzerland, 80, etc. A change in favor of the German industry is expected from the going into effect of the new tariff, on Oct. 1 last, and the termination of the period of reconstruction through which the industry had to pass in view of its entering into competition with the World's automobile industries, which is expected to coincide with the Berlin automobile show this month.

Lighter Jewett "Six" Announced With Two-Door Sedan at $995

All-steel bodies and hydraulic four-wheel brakes fitted. Engine is four-bearing L-head type with 2¾ in. bore and 4¾ in. stroke, developing over 40 hp.

By Leslie S. Gillette

A NEW light six, to be known as the New-Day Jewett, has been added to the line of Paige-Detroit Motor Car Co. It will be sold at present only with one type of body, a two-door sedan of all-steel construction, which is offered with both standard and de luxe equipment, but it is planned to have a touring car and another closed model ready for the National Shows.

The standard sedan, with hydraulic, four-wheel brakes as regular equipment, lists at $995. In the de luxe style the price of the sedan is $1,095. The engine is of four bearing L-head type, having 2¾ by 4¾ in. cylinders and developing in excess of 40 hp. Remy electrical equipment and a Johnson carbureter are fitted. A single dry-plate clutch and three-speed gearset, forming a unit with the engine, which is connected with the semi-floating rear axle by two metal universal joints and a tubular propeller shaft. A standard gear ratio of 4.90, together with 29 by 4.75 in. balloon tires, allows a maximum speed of nearly 60 m.p.h. The wheelbase is 109 in.

While the general layout is conventional, the design was developed with a view to meeting present-day driving conditions, especially the need for rapid acceleration in congested city traffic.

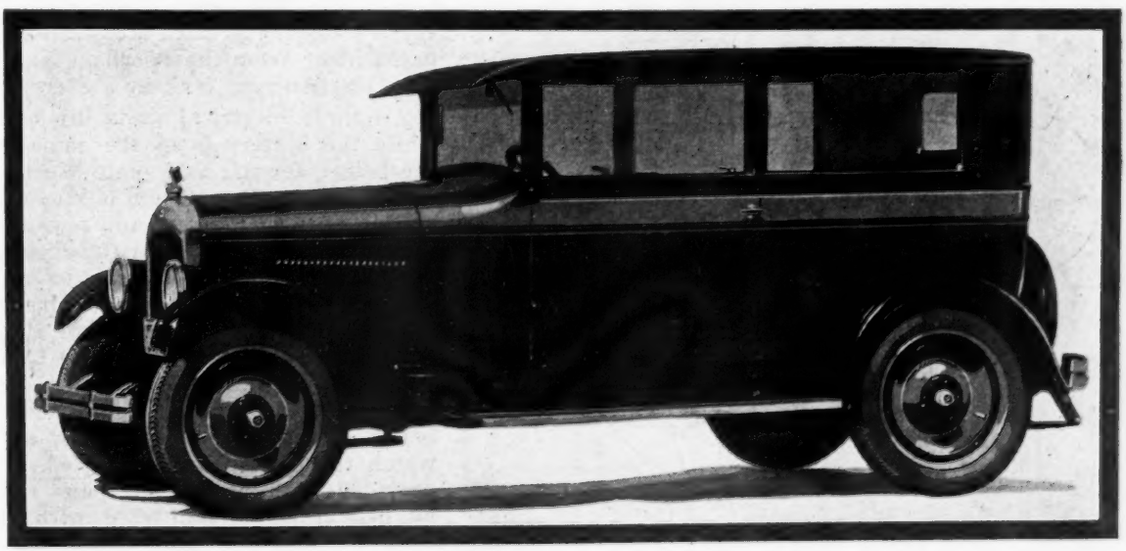
By the use of steel bodies (products of the Murray Body Corp.) with their less bulky corner pillars, door posts and window frames, and as a result of the smaller length of the engine, it was found possible to make the inside dimensions of the two-door sedan the same as on the larger model, though the latter has a wheelbase 6 in. longer.

The larger Jewett and the Paige car will continue to be part of the dealers' line.

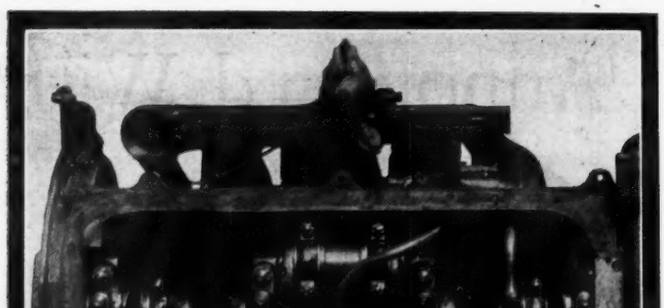
The engine is specially built for the new car by Continental Motors Corp. With a piston displacement of 169 cu. in., the new six develops 40 b.h.p. at 2,400 r.p.m., while a maximum torque of 115 lb. ft is obtained at 800 r.p.m.

Four-point support is used for the power plant, the rear of the engine being supported in a novel manner. By moving the flywheel housing to the rear approximately 1 in. it has been possible to run a channel cross member under the engine between the housing and the oil pan. Two lugs are cast on the housing, and hold-down bolts passing through same secure the rear of the engine to the cross member. Two feet, formed on the rear of the timing chain housing, and resting on pressed-steel brackets riveted to the frame, form the forward engine supports.

The cylinders are cast in a block with the crankcase, the head being detachable. The casting is well ribbed, and by extending it 2½ in. below the center line, great rigidity has been obtained. Extending the water jackets down to the top of the case adds to the stiffness besides providing more effective cooling. A sheet metal cover extending the entire length of the block allows complete inspection and cleaning of the water passages and prevents injury to the casting by freezing. Both the oil pan



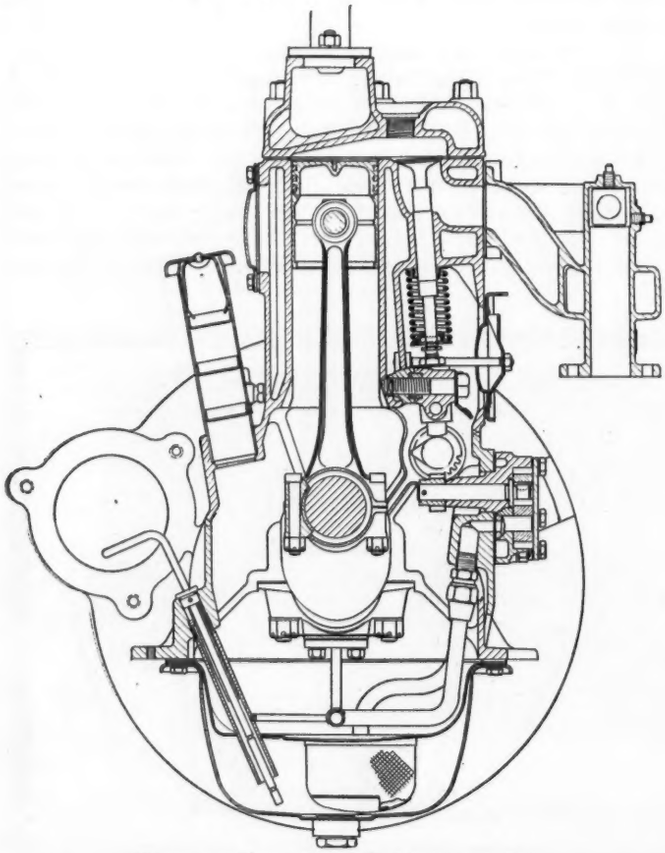
The two-door Jewett de luxe sedan with all-steel body, listing at $1095, which is $100 more than the list price of the regular sedan without de luxe equipment



Jewett engine with oil pan removed, showing oil leads running to each of the four main bearings

and the timing chain cover are steel stampings.

Weighing 43 to 45 lb., the crankshaft is of extra massive construction. It is carried in four poured babbit bearings of 2⅛ in. diameter and of the following lengths: Front, 1¼; both intermediates, 1 5/16; rear, 1 9/16 in. The connecting rods measure 9 in. in length between centers and have a bearing diameter at the lower end of 2 in., with a length of 1⅛ in. With cap, bushings and clamp bolt the rod weighs 28¼ oz. In addition to locking the pin in the cast-iron piston with a set-screw, snap rings are inserted in grooves at both ends. The pin is 47/64 in. in diameter. The weight of the piston is 18 oz., and its length is 3⅜ in. Three ⅛-in. rings are located above the pin, the lowest one being of special oil-control type.



Cross section view of Jewett engine

Front end drive is by a 1¼ in. Link-Belt chain, having 89 links of ⅜-in. pitch and adjusted by swinging the generator mounting. The four-bearing camshaft has its three rear journals carried in cast-iron bearings, while the front bearing is made of babbitt, bronze backed, to enable it to withstand the greater stress should the chain be set too tightly. Dimensions of the bearings (starting from the front) are as follows:

Diameter	1⅞	1 13/16	1¾	1 9/16
Length	1⅜	15/16	15/16	1¾

Cams are ½ in. wide and lift the tappets 5/16 in.

The valves are inclined the same as on the larger Jewett, and have nickel steel heads welded to ⅜-in. stems of carbon steel. On the exhaust, the clear diameter of the valve throat is 1¼ in., while for the intake it is 1⅜ in. By removing two large cover plates the entire mechanism is made accessible. The valve lifters are of the convex type and carried in three cast-iron clusters that are easily replaceable. Turning of the lifter is prevented by a plunger pressed against its flat side by a spring.

Fan and Water Pump Combined

In line with a rapidly growing practice, the fan and water pump are combined in a single detachable unit mounted on the front of the cylinder block and driven from the crankshaft by a "Vee" belt. Adjustment for tension can be made by means of the movable flange on the fan pulley. The shaft carrying the 3-in. rotor and the four-bladed, 16-in. diameter fan is supported in a double row ball bearing at the forward end, while a plain phosphor bronze bushing is employed at the rear. The radiator is of the cellular type and is similar in design and appearance to that on the larger car. A baked enamel shell is standard equipment, while on the deluxe model it is nickel-plated.

Lubrication is by pressure to all main bearings and through the drilled crankshaft to the connecting rods. Ducts in the crankcase webs carry the oil to the camshaft bearings, while another lead to the front of the engine insures positive lubrication of the timing chain. The combined oil pump and relief valve is located in an accessible position just to the rear of the carbureter and below the valve cover plate. Both the bayonet type level gauge and the breather are on the right side of the engine. The oil capacity of the crankcase is 6 quarts.

The manifolding is of the same general design as employed on the larger car. A 1-in Johnson model H carbureter is fitted together with a rectangular section intake manifold. The exhaust is led down in front for the sake of greater accessibility and to keep the hot gases away from the floorboards. Fuel is drawn from the 11-gallon rear tank by a Stewart vacuum system.

All three electrical units are of Remy manufacture, while the battery is of the same type as employed in the larger Jewett, a 13 plate Westinghouse of 115 amp. hr. capacity. The starter is mounted on the right side of the flywheel housing and engages with an 108 tooth gear on the flywheel by a Bendix drive. On account of moving the flywheel housing to accommodate the rear engine support, a slight departure has been made from the standard S. A. E. method of mounting and a special armature shaft, approximately 1 in. longer, is necessary. A spring coupling provides the drive from the chain sprocket to the third-brush type generator, the latter being carried on the separate support casting upon which the distributor is located. The ignition unit is provided with automatic spark advance and operated by helical gears connected with the generator drive. Both the coil and the cut-out are mounted on top of

the generator, close to the distributor, all four units being readily accessible.

High tension leads to the spark plugs pass through insulated brackets, and snap type terminals are used. Headlamps are of Corcoran manufacture, and 6-8 volt, single contact bulbs are used all round.

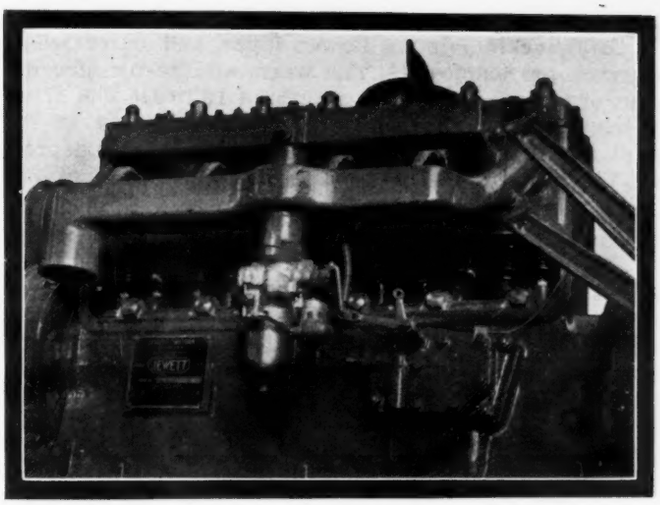
The single plate clutch is of Rockford manufacture. It is claimed to be exceptionallly smooth in operation, and no adjustment is required. Four 90 deg. segments of friction material are applied to each face of the driven disk. The throwout bearing is of Nice make and oiled by pressure gun through a nipple in the throwout sleeve.

The transmission is a product of the Warner Gear Co. Single row ball bearings carry the main shaft, while the lower shaft and pilot bearings are of phosphor bronze. The gear ratios are as follows:

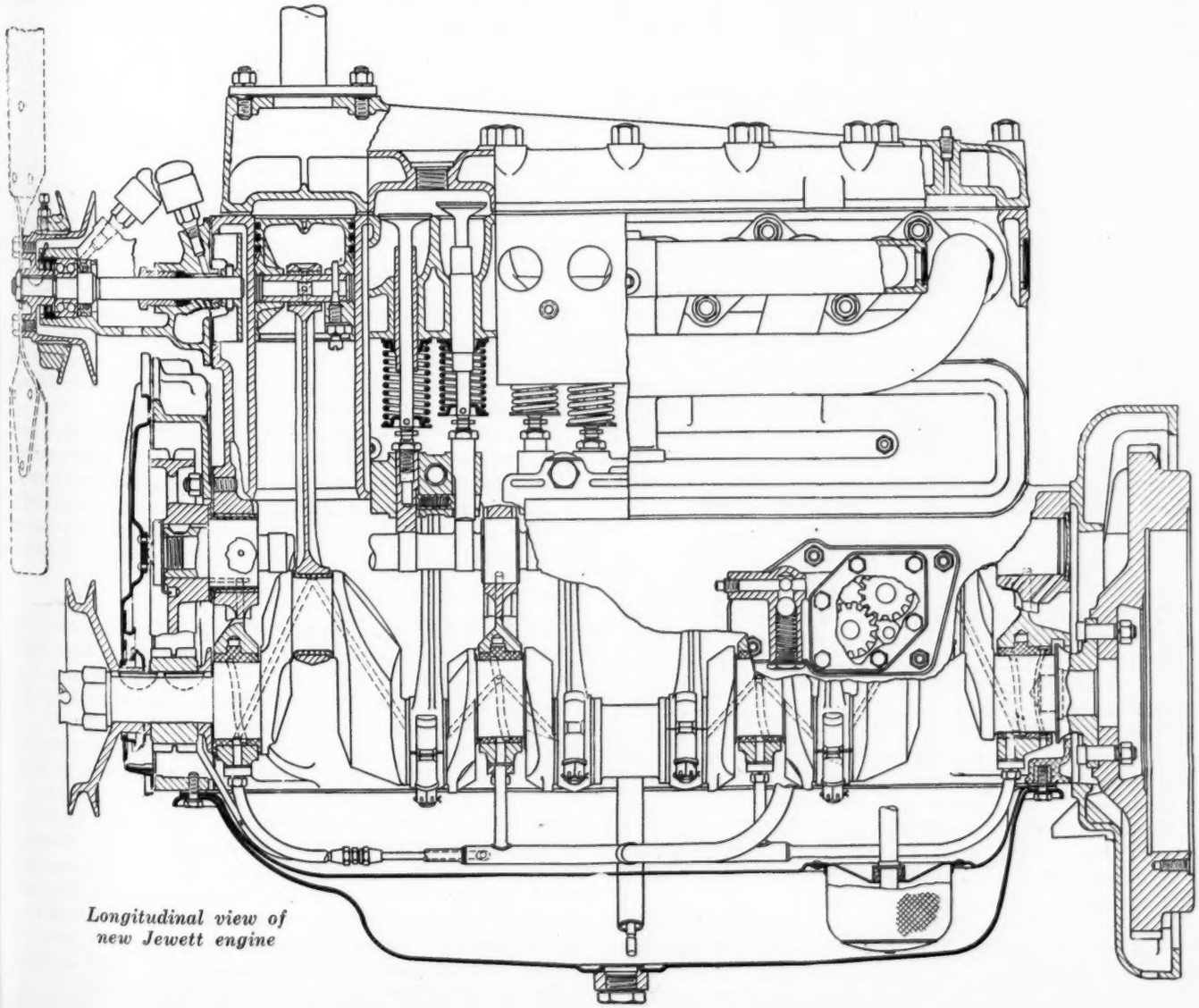
Low	3.07 to 1	High	1.00 to 1
Second	1.77 to 1	Reverse	4.00 to 1

A transmission brake is fitted, the drum being 6 in. in diameter by 2 in. wide.

Two metal universal joints and a tubular propeller shaft, all of Mechanics Machine Co. make, transmit the power to the Salisbury semi-floating rear axle. Propulsion and torque are taken through the underslung springs. The axle housing is of pressed steel. The rear axle drive pinion is straddle-mounted, being carried on a double row bearing in front and a single row bearing at the rear. At the wheel ends of the axle shafts Bower roller bearings are used. The differential is supported on Timken roller bearings. The standard gear reduction is 4.9 to 1.



Manifolding, valve arrangement and oil pump are shown in this view of the new Jewett engine



Longitudinal view of new Jewett engine

The front axle is a Salisbury and has ball bearings on the knuckle joints. Bower inner and outer wheel bearings are employed. The worm and sector steering gear, of Gemmer make, has a ratio of 10 to 1. The 17 in. steering wheel is locked by a plunger located at the point where the post is secured to the dash. By depresing the plunger, the ignition is automatically shut off.

The hydraulic four wheel braking system is virtually the same as that employed on the heavier Jewett, except for the method of conducting the fluid to the rear wheels. Instead of the customary rubber hose leading to the cylinders at each rear wheel, only one flexible connection is employed. On the left side a hose of the usual type connects with a "T" joint placed just above the spring pad and from this point the fluid passes through a short copper tube to the left operating cylinder. For the other wheel, the fluid is led from the remaining outlet of the "T" by copper tubing secured to the axle housing, to the right operating cylinder. This arrangement, besides making for a simpler hook-up, reduces by one the number of flexible connections between the frame and axles and correspondingly reduces the chances of trouble with them. All four brake bands are interchangeable and contract over 12 in. drums. The width of the lining is 1½ in. and the thickness 3/16 in. Dimensions of the springs are the same as those on the larger car, the front springs being 36 by 2 in. and the rear, 54 by 2 in. All shackle bolts are of ⅝ in diameter, except the front bolt of the rear spring, which is ¾ in. The side channels of the straight tapered frame are 5½ in. deep and pressed from ⅛ in. stock.

On the standard model, Jaxon rims carrying 29 by 4.75 tires are fitted to 12 spoke artillery wheels. Tuarc disk wheels are supplied on the special sedan. Chassis lubrication is by the Zerk pressure oil gun.

In addition to the usual instruments on the dash the following items are included as regular equipment: Dash gasoline gage, cowl ventilator, sun visor, coincidental lock and windshield wiper. De luxe models also have a nickel radiator shell, front bumper, quarter rear bumpers, combination tail and stop light, automatic windshield wiper and snubbers all round.

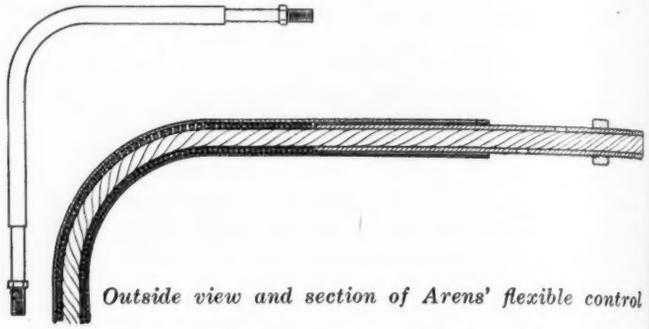
Both front and rear seats set very low. When not required, the right forward seat folds completely under the dash. Doors are unusually wide making it possible for those in the rear to leave the car without disturbing those in front. The windshield is of the one-piece type swinging from the top. The standard finish for both closed cars is a two-tone Killarney Grey lacquer.

Improved Control Mechanism

ENGINEERS are familiar with the so-called wire mechanism, whereby forces can be transmitted around obstructions without the use of bell cranks, the joints of which always develop rattle in time. Such wire mechanisms are largely used for operating the carbureter choke, for instance. The reason that they are used for this purpose and not for the throttle and spark connections probably is that they are considered insufficiently reliable for controls, which are operated more or less continuously, while they will serve where they are worked only once or twice a day. For continuous operation a stranded cable is required, but a cable is not well adapted for transmitting thrusts.

This would indicate that there is a field for an improved mechanism of this type that has a greater degree of reliability. A device of this kind has been invented by Charles Arens, of Chicago, and is being used on airplanes and in marine work. We are informed that it is being used on all Ford air liners, on the Barling bombers and the Owl transport plane of the U. S. Army, and on the motor boats of the Schillo Motor Boat Co.

The control device consists of a flexible cable core, the ends of which are fastened by soldering into steel or other tubes provided with threads for fastening links or levers. The cable is surrounded over the curved portion by a coiled spring, the spires of which lie close together on the inside of the turn. With a flexible cable alone it would be impossible to transmit a thrust without considerable backlash. In the Arens' device the cable transmits the pull and the spring coil transmits the thrust around the corner, while in the straight sections the thrust is transmitted by the tubes soldered to the cable. There is practically no backlash. The flexible portions of the control are surrounded by a rigid metal tube.



Outside view and section of Arens' flexible control

Buick Changes Heating Device

MANUAL heat control for the carbureter on both models of 1926 Buick cars is now being supplemented with an automatic device which cuts off the heat when the car has attained a good rate of speed, it is announced by the Buick Motor Co.

The arrangement consists of a butterfly valve located in the joint where the exhaust gases are led away from the main pipe to warm the carbureter and incoming mixture. This valve is connected with the foot throttle which closes the hot air passage leading to the carbureter when the car has reached a speed of approximately 30 m.p.h.

Regardless of the position of the hand control, the heat is automatically regulated to assure the best performance and to prevent pre-ignition. The attachment itself saves fuel by eliminating the necessity of using a very rich mixture in cold weather. In traffic or at low temperatures, the manual control should be in the "heat-on" position.

SOME details of the British plan for the establishment of an airship service from England to India were given in Parliament recently by Sir Samuel Hoare, Secretary for Air. The first step of the scheme is to be the establishment of a service between Egypt and India, and for this purpose it is proposed to transform the military route into an air route. The Indian terminus is to be Karachi. Then, in two years' time, when two great airships, now under construction, are completed, it should be possible to make the journey from England to Bombay entirely by air in four days, and to convey 100 passengers, besides mails, at each trip. In connection with light airplanes, it was proposed, Sir Samuel stated, to arrange four or five auxiliary squadrons on the lines of the Territorial Army, and to foster the organization of light airplane clubs and training squadrons at the universities.

Just Among Ourselves

Sales Possibilities in Two-Car Families

THE number of families owning two cars has increased materially in the last few years, but few men in the industry look for this trend to develop widely enough to have any major effect on the future market. Suppose that one-twentieth of present car owners became two-car men, the total increase in the market would be only about one million, which—estimating car life at 7 years—would result in a replacement market of something less than 150,000 cars a year. Such sales possibilities are not to be neglected, but neither should their extent be overestimated. The figures assumed here may be somewhat inaccurate but, in a general way, they would seem to prove the point.

New York Show to be Full of New Things

HOW much new stuff will there be at the National Shows this year? It's safe to answer "a good bit." True, a number of manufacturers already have announced their 1926 lines, but a good many are planning to exhibit their new models for the first time in New York and Chicago. It's a little early to give accurate figures, but we have heard already of at least 10 new models which will be announced at New York and which will be exhibited there in the shows. In addition to that group, many of the cars previously announced and described in the trade press will be on public view for the first time. Among the ten models now scheduled to have their premiers in New York are 5 sixes and at least 2 eights. New body lines will be shown on several prominent lines. And if the Salon is any criterion of body trends, this year's New York Show is going to be even more colorful than last year's notable display. Anybody who has to go to as many shows as we do tends to get a bit blase on automobile exhibitions, but our advance knowledge of what's going to be at the New York opening next January indicates that even the hard-boiled have a real thrill coming to them. And there's going to be a particularly good chance to see the cars and talk to the parts makers on the Trade Days which will be on Monday and Tuesday mornings, January 11 and 12. Hope we see you there!

Bridge Traffic Not Hindered by Horses

THERE has been some talk of ruling horses off of certain streets because they move so slowly as to hold up the motor traffic which strongly predominates. No legislation of that kind seems to be necessary on the Bear Mountain Bridge which spans the Hudson River and over which travels much of the traffic entering New York City from the North. The bridge was opened on Thanksgiving Day, 1924. In the first year of its existence only 1 horse drawn vehicle passed over it. Taking this statistic as a basis some of the automotive economists can figure out how many equines will gallop over this big trestle in 1926.

Peace, Quiet Horses and Speed

TO even the most rabid motor enthusiasts, however, there must be a certain sadness at the passing of the horse-drawn vehicle and the air of quiet ease which one associates with the carriages of a pre-jazz age. The few spaces in America which still resist the inroads of the automobile—such as Lake Mohonk, N. Y., and Mount Royal Park in Montreal—attract and charm hundreds of visitors every year because of the slower tempo at which life seems to move within their boundaries. And many of those visitors are enthusiastic automobilists before and after their visit. We know of two rival automotive trade paper editors who drove recently through Mount Royal Park in an old Victoria of ancient vintage. Said one, "No automobile in the world could give you as restful and nerve-quieting a ride as this, could it?" And the other echoed a hearty "Amen," being of a religious turn of mind, as all automotive editors are well known to be. It's true that they nearly froze to death before they got back and did some round cursing at the slowness of the ride when the rain began to fall, but that spoils the story, so we won't mention it.

When Does a Rumor Become a Fact?—Mergers

DOPING out possible mergers is a favorite luncheon table sport among executives and onlookers in the industry today. One would have to be a master of that phase of mathematics known to the school books as "Permutations and Combinations" to figure out how many different possibilities have been propounded or how many times the same companies have been mentioned in different connections. Future mergers undoubtedly are likely because of the fundamental economics of the present automotive situation and that is the reason, probably, that wild rumors get more attention than otherwise would be the case. Personally, we have reached the stage where we believe a merger rumor to be authentic about two months after the final papers have been signed, sealed and delivered. There have been too many slips between negotiations and consummation of negotiations in the last year to make first reports impressive.—N. G. S.

The English Truck Show—

Buses are Center of Attraction; 68 Makes of Vehicle Shown, Including 11 American

Features of the Exhibit:

1. Unusual number of new bus chassis.
2. Increase in number of bus models with forward driving position.
3. Wider use of pneumatic tires for both passenger vehicles and trucks.
4. Large number of makers offering four-wheel brakes for first time.
5. Tendency for the enclosed bus to displace the open type.
6. The evident trend of demand in the truck field for vehicles of smaller load capacity.

By M. W. Bourdon

THE predominant feature at the English Truck Show, at Olympia, is the large number of new bus chassis introduced by British and European exhibitors. In point of fact, passenger vehicles occupy a very large share of the space, far more than at the last exhibition of the kind, in 1923. Moreover, it can be said that, for the first time, manufacturers are indicating that they realize the need for passenger and truck chassis to represent two separate and distinct services.

Beyond the number of new bus chassis, outstanding features of the show are: Wider use of pneumatic tires for both passenger vehicles and trucks, the number of makers offering four wheel brakes for the first time; the increase in models with a forward driving position (alongside and slightly higher than the engine); the tendency for the enclosed bus to displace the open type coach; and the evident trend of demand in the truck field for vehicles of smaller load capacity than hitherto.

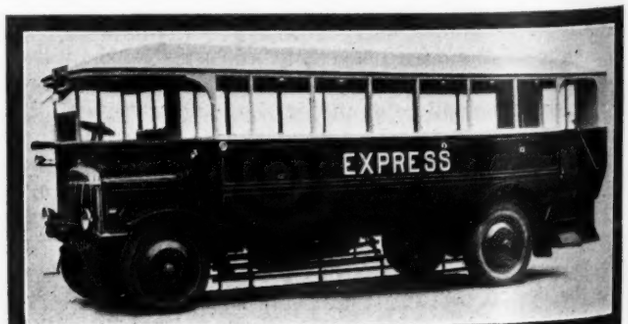
There are 68 makes of vehicles shown, 27 bodywork exhibits, 158 accessories and 21 tires. The vehicles shown consist of: British—28 gasoline, 8 steam and 4 electric; French, Italian, Swiss, Belgian and Danish— 17, all gasoline; American—9 gasoline and 2 electric, viz., Chevrolet, Chrysler, Dodge, F. W. D., G. M. C., Graham, Overland, Reo, Traffic, Baker and G. V.

The prevailing atmosphere at the show is one of satisfaction at the recovery of business in trucks, now that all the war surplus vehicles have been disposed of, and optimism as to the future. The majority of British makers report plants fairly well occupied with orders, both for home buyers and for export, the latter branch being far better than ever before, since the war, at all events.

Until this year British buses (with the exception of those operated by the London General Omnibus Co.) have been ordinary truck chassis, modified in such matters as wheelbase and gear ratio. But at Olympia are 19 new models designed expressly for passenger work and, although possibly examples of some of them will be acquired and used for goods-carrying, their makers are as yet offering them for passenger work alone.

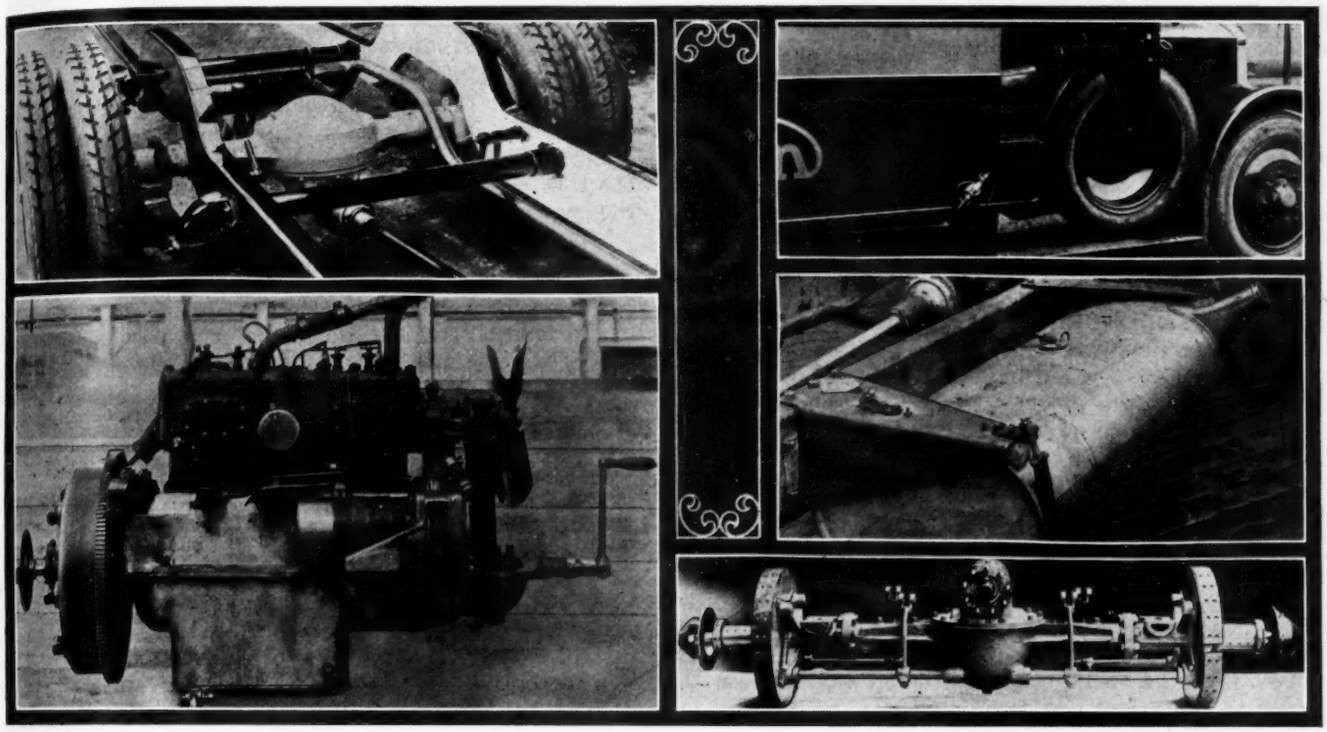
Although 95 per cent or so of these new models will be sold with pneumatic tires, it is admitted in all except one or two cases that the vehicles can be run on solid tires if purchasers so desire. It need hardly be said that the option thus implied has prevented designers from reducing the weight of the chassis to such an extent as would have been possible if their instructions had been to provide for pneumatic tires exclusively. British manufacturers, it would appear, are not yet prepared to go "all out" for pneumatics, by refusing to supply passenger chassis with solid tires; and yet they freely admit that during the past two years very few buses with a seating capacity of less than 36 passengers have been supplied with other than pneumatic tires. In one or two instances it is admitted that not one solid-tired vehicle of that type had been sold for over 18 months past.

Despite the limitations thus applied to designers' efforts towards weight reduction, the latter has occurred to an



A new Tillings-Stevens bus with mechanical drive. Note driver's position alongside the engine. The forward drive type is increasing in popularity in England

BELOW are detail views of some of the features seen at the English Truck Show. Top, right—Rear end of Guy bus chassis which has a Daimler-Knight six cylinder engine. Top, left—The Albion bus on which the running board is utilized for carrying the spare tire. Bottom, right—New Albion bus engine. Note stamped steep support arm passing through tunnel across front of timing case for central trunnion bearing. Left, center—How the fuel tank is supported at the left side of the frame on the Albion bus. Bottom, left—Rear axle of 3500 lb. Dennis truck chassis



appreciable extent in most instances. And here it may be said that a powerful urge in this direction exists in a proposed new regulation to be issued by the Ministry of Transport, which will have effect in increasing the legal speed of buses and trucks running on pneumatic tires from 12 to 20 m.p.h., providing the unladen weight of the complete vehicle is less than 3¾ long tons.

Difference in Heights

The majority of the new chassis that fall within the scope of the proposed regulation have appreciably lower frame levels than the heavier models they supersede. There is, however, considerable difference between the minimum and the maximum frame levels of these new types, for they range from approximately 20 in. to over 30 in. The average is about 24-25 in., the latter height being, roughly, the maximum permissible when two steps to the interior are used in place of three or four as in the past. Strangely enough the Associated Equipment Co., (the manufacturing branch of the London General Omnibus Co., which originated the low level bus in England when it introduced the N. S. type chassis two years ago) has produced one of the highest of all the new models of low level "lightweight" chassis for single deck buses. Its frame is 30 in. from the ground when fully loaded.

The present show includes a larger number of new models of all classes than have ever appeared at a previous show of this kind in England. Two or three makers have introduced a full range of new types, without displacing the previously existing models. This is doubtless due to the realization of the fact that passenger services call for wide differences in design from truck requirements.

Leyland, one of the most prominent makers, is putting forward a range of five new models, supplementing an existing range of six types with optional variations of wheelbase in each and every one. Karrier, another prominent firm, has several new models, two of which are six-wheelers, put forward more as a "feeler" than with the idea of going into production with them immediately. Halley has four new models, Vulcan three, A. E. C. four (including two introduced during the past summer), Guy two, Dennis two, Albion three, Maudslay four, and so on. In very few cases have any of the existing models been dropped, the intention being to retain them as truck chassis pure and simple.

Approximatly 50 per cent of these new models have certain main components, such as engines and gearsets, that are identical with the models current hitherto, so that although, for instance, a maker may be putting forward three or four new types the latter will differ from the old ones mainly in their frames and axles. That is not always so, by any means, for Leyland, as an example, has a new range of overhead valve engines for five new passenger models. These engines are of four different bores and two different strokes, two crankcases serving for them all.

In regard to front-wheel brakes, these are usually an optional feature. The Maudslay chassis described in detail in *Automotive Industries* of July 16 last is one exception. As already inferred, pneumatic tires are "extra" as well, while another option in some cases relates to the driver's position, which may be either forward alongside the engine or in the usual position behind the hood and dashboard. The full "over-type" chassis is not favored by British manufacturers, though Renault is exhibiting a bus chassis with the driver located immediately over the engine.

The prevailing demand among passenger vehicle buyers is for the forward driving position, and where new engines are fitted to the new models they generally have all the accessories on the left, thus rendering them accessible when the driver is on the right in accordance with the British practice.

There are five new bus chassis with six-cylinder engines,

viz., Halley, Karrier, Vulcan, W. & G., and Guy, the latter being notable in having a Knight steel-sleeve-valve engine supplied by the Daimler Company and used by the latter in the 35 hp. Daimler passenger car. The use of this passenger car engine is merely in accord with the trend toward the reduction in the weight of power-plants, higher normal engine speeds and a higher efficiency.

Block-cast cylinders are being used where previously only pair-cast were found, but although certain new models have overhead valve engines the L-head type is general. Hitherto block-cast cylinders have been limited to a bore of 3½-3¾ in. or under in British truck practice, but they are now found with bores of 4½ in. and even 4¾ in. in one case (a new Bristol chassis for double deck buses).

Many makers are using Duralumin connecting rods and aluminum pistons, and in connection with the chassis last mentioned it may be noted that the duralumin connecting rod and aluminum piston unit weighs 8 lb., 5½ oz., as compared with 14 lb. 2 oz. in the case of steel rods and cast-iron pistons. In this instance, the lighter rods and pistons are said to have enabled the power output of the engine at 2,000 r.p.m. to be increased from 67½ b. hp. to 80 b. hp., and, in conjunction with a steel flywheel and counter-weighted crankshaft, to justify an engine speed of 3,000 r.p.m.

Bristol Cylinder Head Design

The cylinder head design of the Bristol shows an inclination towards the Ricardo type, for the top of the combustion chamber slopes upward from over the piston to the valves, with the spark plug located midway between the center of the valves and the cylinder. The compression ratio is 4.7 to 1 and the engine dimensions are 4¾ x 6 in.

Three-point suspension for engines is a feature of most new models. The single front support as a rule is of one of two classes, either a trunnion bearing on the front cross member or an arched cross bearer—of stamped or cast steel—from which the trunnion bearing is supported. There are, however, many variations of those two main classes, and among them may be put a few three-point suspended sub-frames, though only Guy has a subframe with three spherical trunnion bearings that permit it to assume quite an excessive angle relative to the main frame without distortion.

All makers now are making definite provision for generators and for starting motors on passenger chassis. Rarely, however, are starters taken by buyers, not merely because they are invariably an "extra" but also because they are considered unnecessary.

The matters of extras in British bus and truck practice is approximately where it was many years ago in respect of private passenger cars. The chassis is priced with solid tires in most cases; pneumatics are an extra (or, if they are standard, a spare is not included); electric lighting, electric starting, four-wheel brakes and bodies are "extra," the latter being frequently made by specialists in body-work as a separate contract.

More Unit Power-Plants

Unit power-plants are considerably more in evidence, but are by no means general, even in new models, and rarely are they seen on trucks of over 3500 lb. capacity. Three-point suspended separate gear-sets, with four speeds, prevail in the larger chassis, and no small proportion of one-ton models have four speeds.

A prominent trend in connection with the transmission is the use of open propeller shafts in two sections with a central—usually self-aligning—bearing in front of the middle universal. That trend occurs not only in all-open shafts but also with a torque tube for the rear part. With open shafts the torque and drive are usually taken through the rear springs, though in view of the relative rigidity of the latter from the aspect of a torque member, it would appear desirable to use a special torque arm, with a fully flexible anchorage, in order to justify further weight reduction in transmission details generally; that has been done in isolated cases.

A new note in transmission occurs in a new Tilling-Stevens gear drive model (supplementing the gas-electric range), for it has a four speed epicyclic gear-set, the ratios of which are "selected" by a small lever over the steering column and brought into use when required by the operation of a pedal. Self-adjusting bands are used.

Worm Gearing for Final Drives

Worm gearing is general practice for final drives. There has been no increase in double-reduction transmissions nor in internal gears with a "solid" rear axle. Leyland in two of the five new models for bus use has adopted worm drive for the first time, while in the other three a double-reduction drive is continued but with spiral bevels and double helical spur gears instead of straight bevels and straight spur gears. In aiming at the lowest possible frame level, no maker has adopted the drive of the newest London bus to secure a low axle center, viz., a 3 or 4 to 1 worm gear and internal gears on the rear wheels.

As in private car practice there is great diversity in the design and operation of four-wheel brakes. No British maker has adopted an hydraulic system, but Karrier uses the Westinghouse air-pressure equipment, Guy and Vulcan have the Dewandre vacuum outfit, and Maudslay, Leyland and Dennis have adopted mechanical servo devices. The Leyland is on much the same principle as the Maudslay (see *Automotive Industries* July 16, 1925), in which the transmission brake shoes are anchored to a double-ended beam floating on a central trunnion concentric with the drum, so that the beam rocks when the transmission brake is applied and actuates the front brakes, which are coupled to the ends of the beam; equal effect occurs in both directions.

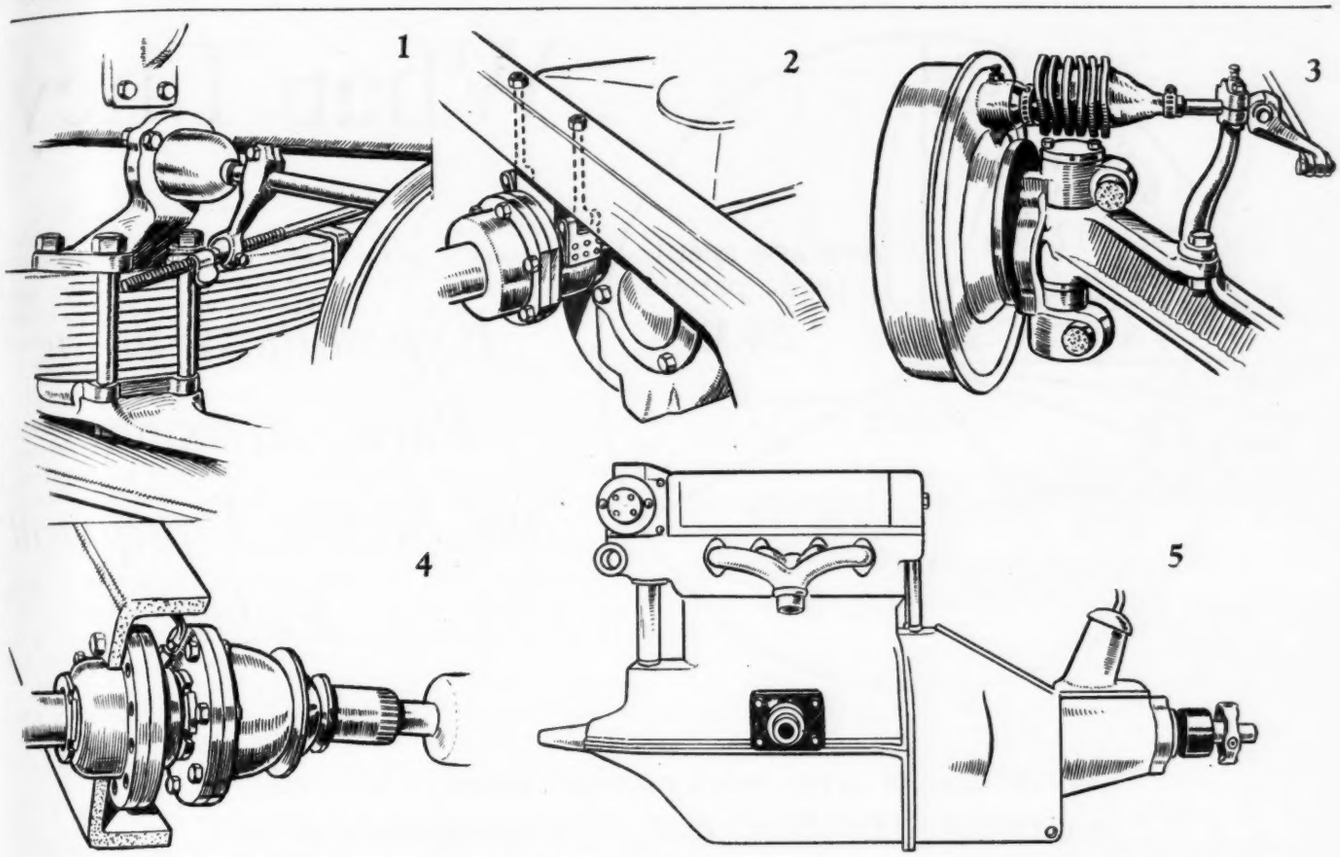
Dennis Has Separate Servo

Dennis has a separate servo reminiscent of Rolls-Royce practice. Pedal actuation engages a kind of plate clutch on a shaft driven by and extending at right angles from the gear set; the driven plate has a projection which, in partially rotating, carries with it the corresponding projection on one or other of two sleeves, that are extended below to form levers connected to the linkage of four brakes. One sleeve comes into use to retard forward movement and the other to retard rearward movement of the vehicle. Pedal pressure supplements the servo devise in applying the rear wheel brakes, or is available alone for that purpose if the servo should fail or be ineffective owing to the vehicle being stationary.

In both the Guy and Vulcan, the Dewandre outfit is supplemented by pedal pressure, which also is effective alone if the vacuum device is inoperative. Guy has an entirely separate set of rods and levers for pedal application, beyond the normal coupling device which, associated with the Dewandre equipments in general, is usually considered sufficient safeguard.

Direct mechanical operation is usually accompanied by Perrot type brakes, the Perrot-Bendix three-shoe pattern being used as well. Rubury front brakes are also found (A. E. C. for instance).

Frames show a decided tendency to become stiffer if not heavier, for some deeper sections than have ever before appeared are to be seen on new chassis. The new Bristol, for example, has frame sides 10 in. deep, 3 in. wide and of



1. The front brake shaft on the new Guy bus is supported by a spring clamping plate integral with the bracket. 2. Steel strap suspension of four speed epicyclic gearset on Tillings-Stevens new mechanical drive bus chassis. 3. Showing how the front brake shaft is supported on the new Dennis bus chassis. 4. Center bearing housing supported by a frame cross member on the new W & G six cylinder bus chassis. 5. Brackets at each side of the crankcase and an extension of the gearset form unusual three-point suspension for this M & D truck engine

3/16 in. plate, while Guy on both new models has adopted frames 9 in. deep, 2½ in. wide and of 3/16 in. stock. Maudslay strikes a new note with frame sides of H Section, with the channels at each side. Only Daimler retains the flitch plate frame, though two or three makers continue to use rolled steel of channel section. Only pressed steel frames appear, of course, in the low level chassis, the frames of which fall 12 in. or more between the flywheel line and the arch over the rear axle. Some makers, those who have not gone below 26 or 28 in. in their frame levels offer, for rear entrance buses, an extension of the main frame at a lower level to permit a two-step-up to the rear platform with a low step to the bus interior.

No British maker has adopted a pressed steel rear axle housing; the majority favor a cast-steel construction, though the double-banjo forging with top and bottom castings of aluminum or steel is in fairly wide use. Worm drives are nearly all under the axle in the low level chassis, and in one or two instances the same axle casting or forging as is used for the overhead worm drive of truck models is adapted to the under-worm gear of the bus model; what is the base of the worm gear housing in the truck becomes the top of the housing in the bus. Full floating axles are general for one-tonners and all sizes upward, though a point of note is that roller bearings are displacing the floating bushes previously so popular in British practice.

At Olympia it is difficult to find a new truck model of more than 2-2½ tons load capacity. The 3-5 ton model that has predominated at earlier shows has receded well into the background, and it is quite evident that whereas the 3-tonner was at one time the standard model of most makers, it now occupies a relatively unimportant position in the program of the majority.

Nearly all makers, questioned on the subject, reported a trend of demand towards smaller load units. That does not mean that the big capacity types are out of favor, so much as that by far the larger field is now in the smaller models.

This variation of the general demand is, however, to some extent accounted for by the experience of users leading them to realize that the greatest economy and the best service in the long run is not necessarily secured by transporting as big a weight as possible in one load, and that while two-four-tonners may be operated at a lower cost than four two-tonners if the larger units generally are fully loaded and have lengthy point-to-point journeys—or have full load deliveries on short or long journeys—the four smaller units are better able to cope with variations in transport requirements, operating to better advantage by affording a more "flexible" transport equipment, and often at less cost in the end.

So we have reports of 2-2½ tonners displacing 3-5 tonners, 1½ tonners displacing the first mentioned and so on all down the scale. Four years ago, the truck show at Olympia was notable for the number of larger models introduced; at the present show the trend is completely reversed and where new models in trucks are put forward they are almost invariably smaller types.

Dennis, who probably has the biggest output of trucks above one-ton capacity, is an exception for a 1-1¼ ton chassis introduced at the 1923 Show is superseded by a 1½-1¾ ton model on similar lines for which an output working up to 100 per week is planned.

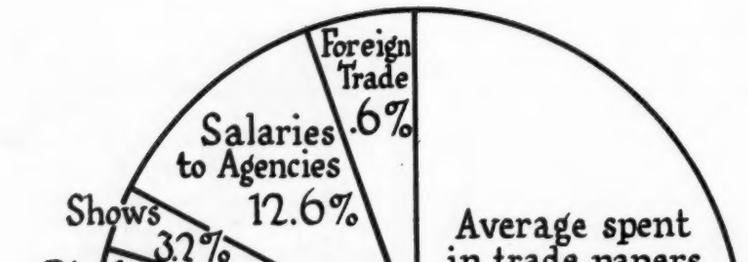


Fig.2. Composite chart showing how appropriations are distributed by the five groups as a whole

What They

A Survey of Expenditures in the Parts, Accessories and Service Equipment Fields

Percentages of gross sales receipts given to advertising range from .84 to 8.10 per cent. Appropriations analyzed.

WHAT it costs under present conditions to advertise automotive parts, accessories and service equipment and how the manufacturers of these products distribute their advertising appropriations are shown in an interesting survey recently completed by the Motor and Accessory Manufacturers Association.

The survey, conducted by Neal G. Adair, manager of the association's Educational Department, reveals that advertising costs range all the way from 0.84 per cent to 8.10 per cent of the gross value of sales, depending on the product and the market in which it is sold, and that the largest portion of the advertising dollar is invested in trade paper space.

The membership of the association was divided into five classes for the survey, as follows:

1. *Manufacturers of original equipment* (parts sold to manufacturers for further manufacturing purposes—clutches, transmissions, body hardware, motors, paints, etc.)

2. *Manufacturers of parts sold both for original equipment and through the trade for replacement* (storage batteries, brake lining, carbureters, piston rings, etc.)

3. *Manufacturers of replacement parts sold only through the trade* (piston rings, piston pins, springs, wheels, motor parts, etc.)

4. *Manufacturers of accessories sold for original equipment and through the trade* (windshield wipers, pedal pads, bumpers, horns, spotlights, etc.)

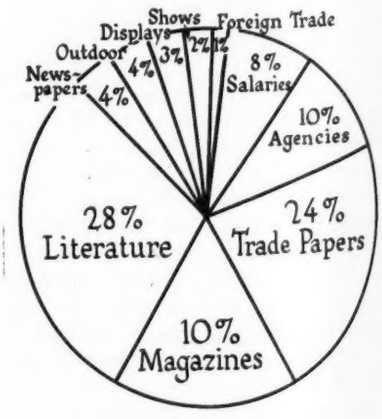
5. *Manufacturers of service equipment* (maintenance machinery and tools sold through the trade for use in the trade).

As might be expected, advertising costs in the five fields vary in proportion to competition and the size of the audience which it is necessary to reach. Thus, ranking first in expenditures as compared to gross sales are the accessory manufacturers. Referring to Fig. 1, it will be seen that this group spends for advertising an average of 8.10 per cent of gross sales—slightly more than $8 of every $100 taken in through sales put back into the business in the form of advertising; or, to put it another way, about $8 spent in advertising to develop $100 worth of orders.

This is abnormally high and is probably due to the great number of new accessories which are introduced each year with expensive advertising campaigns, the fact that competition is so intense in this field, and because the market for the product usually is so broad that the advertising has been correspondingly broad in scope.

Original Equipment

Fig. 3. Distribution of advertising appropriations by manufacturers of parts sold for further manufacturing purposes



Parts

Fig. 4. Distribution by makers of parts sold both for original equipment and through the trade for replacement

Pay to Advertise

Service equipment manufacturers lay aside for advertising an average of 5 per cent of their gross sales receipts; manufacturers of parts sold both for original equipment and for replacement, 4.3 per cent; manufacturers of replacement parts, 2.34 per cent, and manufacturers of original equipment, 0.84 per cent.

The above figures are based on reports covering the year 1924. The survey indicated that the appropriations for 1925 will represent smaller percentages of the gross sales, except in the replacement parts group. Actual advertising expenditures, however, are expected to be as high or higher than in 1924, as a substantially larger volume of business is being transacted in nearly all cases.

Having established the percentages of gross income that the various manufacturers were investing in advertising, the survey proceeds to the next major question, "Where it is being invested." Some interesting facts on this phase of the subject are brought forth.

Fig. 2. is a composite chart showing the distribution of the advertising dollar in the five fields as a whole. The dollar is divided into nine portions. The largest portion, 34.6 per cent, goes for advertising space in trade papers. Literature, such as catalogs and descriptive pamphlets, takes the next largest portion, or 28.8 per cent. Space in general magazines absorbs 11 per cent. Three per cent is spent for space in newspapers; 1.8 per cent for outdoor advertising (billboards, etc.); 4.4 per cent for displays; 3.2 per cent for shows and conventions; 12.6 for salaries and agency service charges, and 6 per cent for exploitation in foreign fields.

The distribution of appropriations by each group is shown in Figs. 3, 4, 5, 6 and 7. This distribution is based on 1924 figures but will be materially the same for 1925, being based in most cases on practices which have proved effective and satisfactory over a period of years.

To the survey is appended a digest of some of the replies received to the questionnaire used by Mr. Adair in obtaining his data. This information is interesting in that it shows practices of individual manufacturers. One manufacturer of a large part used exclusively as original equipment devoted 1 per cent of his gross sales to advertising in

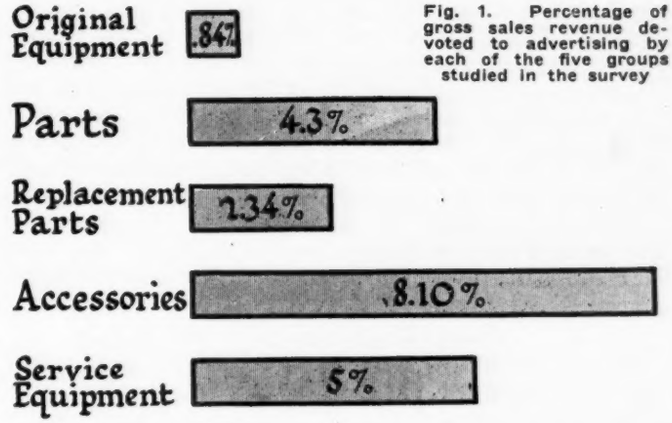


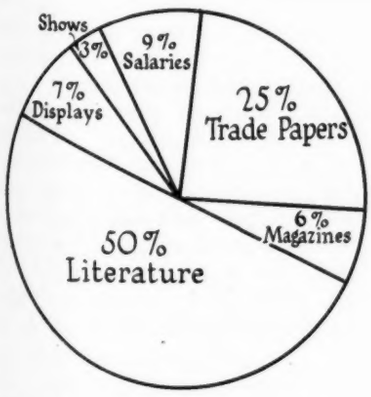
Fig. 1. Percentage of gross sales revenue devoted to advertising by each of the five groups studied in the survey

1924, but his percentage for 1925 will be only about .86 per cent, due, presumably, to higher gross sales. He is dividing his appropriation this year as follows: Salaries 40 per cent, agency service, 12 per cent, trade papers, 42 per cent, consumer literature, 4 per cent, shows, 2 per cent.

Another manufacturer in the same class appropriated 2 per cent in 1924 and 1.25 per cent for 1925, spending the entire amount each year for trade paper space. Still another manufacturer in this class jumped from 1.04 per cent in 1924 to 2.7 per cent in 1925 and is using trade papers to the extent of 81.9 per cent of his appropriation.

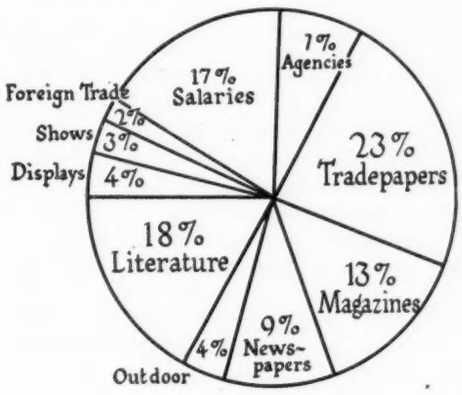
In the accessory field one manufacturer has set aside 3.3 per cent of his gross sales to finance his advertising this year, a second is spending 10 per cent and a third is appropriating 12 per cent after having put into this end of his business in 1924 the exceptionally high sum of 21 per cent of gross sales. This last is an unusual case and is explained by the fact that the company has pioneered a number of new lines during the last two years, this necessarily entailing heavy advertising expense.

Fluctuations which occur in all five fields in the percentage of gross revenues used for advertising are explained partly by the ages of the various companies and their products. Reputation, in other words. An old established



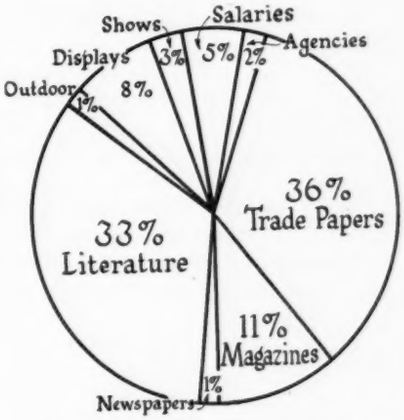
Replacement Parts

Fig. 5. Distribution by manufacturers of parts which are sold only through the trade for replacement purposes



Accessories

Fig. 6. Distribution by manufacturers of accessories sold both for original equipment and also through the trade



Service Equipment

Fig. 7. Distribution by builders of service equipment sold through the trade, principally for use in garage work

firm with a reputation already won for its product encounters less sales resistance than a new firm with a new product and thus finds it possible to get sales volume with a relatively smaller appropriation.

Reports from 49 manufacturers whose products had been on the market five years or more showed that they had allotted to advertising, on the average, 3.76 per cent of their gross sales in 1924 and that the figure had been reduced to 3.48 in 1925. As compared with this, reports from 8 companies selling products less than five years old showed an average expenditure of 7.9 per cent in 1924, but they were able to reduce this to 5.43 in 1925. The report of a manufacturer of replacement springs gives interesting figures on the use of advertising in building a business. In the first year this company spent 18 per cent of its gross sales for advertising. In the second year the percentage was brought down to 6.5 per cent, the third year to 3.4 per cent, and in the fourth year to 3.3 per cent, where it appears practically stabilized.

Special Conditions to be Met

Such comments as were made by the different manufacturers indicated that all had special merchandising conditions to meet and advertising methods differed accordingly, although, as the survey states, "General opinion supported the recognized practice of 'keeping at it' in advertising a product, whether to a part of the industry, the entire industry or the industry and the public. It was generally stated that sporadic drives were likely to be disappointing in results while continual presentation of a product before prospective customers builds sales and accomplishes the supreme object of advertising, that is, to reduce the total cost of putting a product in the hands of the consumer and so to increase profits of the manufacturing and distributing agencies and decrease costs to the consumer."

Summing up the salient facts brought out by the survey, it is found that:

Companies selling to the trade generally spend a larger percentage of gross sales for advertising than those selling to manufacturers.

Accessory companies spend relatively more than any other group.

Service equipment makers spend the second largest percentage, parts manufacturers the third and original equipment makers the smallest.

Older companies spend relatively less than concerns whose products are comparatively new.

Advertising percentages show wide divergence in different groups and among companies in the same group.

There seems to be no standard division of expense or methods.

Trade papers are the chief mediums, literature the second greatest investment and general magazines the third.

Advertising expenditure percentages will be about the same in 1925 as they were last year. Replacement parts makers are spending more and manufacturers of original equipment, accessories and service equipment are spending a smaller percentage of gross sales, but not a lesser amount, as sales this year bulk larger than last.

From 1924 to 1925 trade papers showed a gain in advertising popularity.

The survey concludes with a summary of the opinions of practical men regarding manufacturers' advertising methods as stated at a conference of M. & A. M. A. members' advertising managers at South Bend last June. This summary follows:

1. The weakest point in the advertising effort of many automotive companies is failure of complete cooperation between the advertising and sales departments. The manufacturer's advertising needs to be merchandised to his own sales organization, and, in case of a replacement part on accessory, to the sales organization of his wholesalers.

2. The original equipment manufacturer needs to advertise (except possibly in cases where the product loses its identity in the completed vehicle). Direct influence is exerted by advertising in business papers read by car and truck makers and indirect influence through papers read by dealers. Advertising is an aid in holding contracts as well as obtaining them. The original equipment manufacturer needs to keep his product "in the picture."

3. Technical mail matter addressed to engineering and purchasing executives is effective original equipment advertising.

4. The original equipment manufacturer can influence purchases by cultivating dealers in cars or trucks using or contemplating using his equipment.

5. Consumer advertising is of little or no value in the case of technical replacement parts, selections of which are made or recommended by the trade.

6. Trade paper advertising, sometimes supplemented by direct mail, builds trade acceptance necessary for successful marketing of replacement parts.

7. Accessories need trade paper advertising and, in cases where the product has a broad public appeal, consumer magazine advertising.

8. Jobbers and jobber salesmen will get better results for a manufacturer of replacement parts or accessories when they are kept thoroughly informed of his advertising efforts directed to the retail and service trade and, where magazines are used, to the consumer public.

Hidden Costs of Exporting

EXPORTERS of automotive products are generally familiar with the costs of exporting in so far as they are paid on this side, such as boxing, inland and ocean freight, marine insurance and duties. There are, however, other charges made upon export shipments which are not generally recognized or understood by American exporters but which often have a profound effect upon the retail price at which their products can be sold in foreign countries.

These charges include lighterage at the port of destination, freight, fees of forwarding agents, insurance, unpacking and remounting charges, documentation and interest charges on the money the foreign distributor has invested in the shipment. All of these charges, with the addition of some others for certain countries, may increase considerably the delivered costs of cars or trucks and so should be understood by exporters.

To facilitate such an understanding among American automotive manufacturers the Automotive Division, Department of Commerce, in its report for November 23, 1925, has summarized the conditions for a number of the more important export markets and has ascertained average values of these various charges for the markets.

The countries for which data are given are Austria, Belgium, Czecho-Slovakia, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Spain and the United Kingdom.

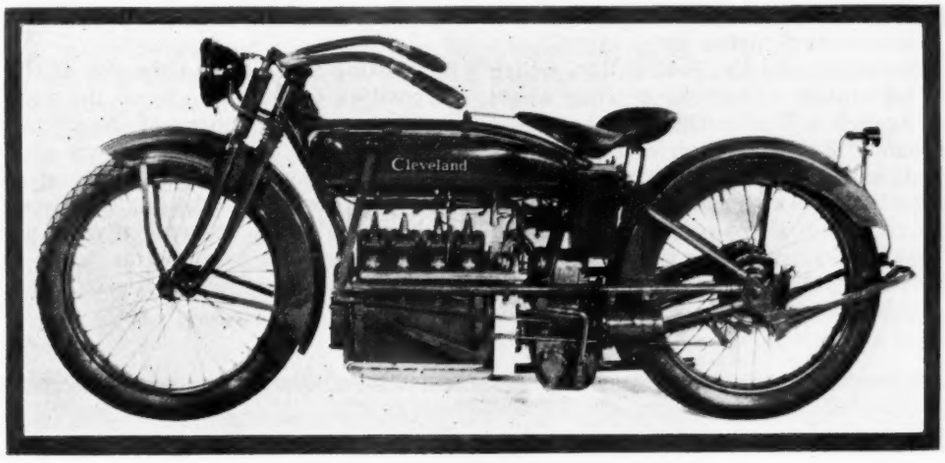
A NEW air passenger service has been opened in Germany between the great industrial district of the Ruhr and Munich, with an intermediate stop at Frankfort. Connections will be made with the Cologne-London service in both directions.

Four-Cylinder Model Added to Cleveland Motorcycle Line

Engine is high-speed, four-cycle, direct air-cooled type with 2 3/16 in. bore and 2 7/16 in. stroke. Crankcase cast aluminum.

THE Cleveland Motorcycle Manufacturing Co., Cleveland, O., has announced the addition to its line of a new four-cylinder motorcycle which is now in production. The engine is a high speed, direct air cooled, four stroke type with 2 3/16 in. bore and 2 7/16 in. stroke. The cylinders are interchangeable, of the T-head type, and are one piece iron castings, well finned, with metric thread spark plugs. The gary iron pistons are fitted with three rings and the full floating tubular piston pins have bronze end buttons to prevent scoring of cylinder walls. All valves are interchangeable and have 45 degree seats with ports opening one inch in the clear.

Exceptionally long connecting rods of forged duralumin have big end bearings babbitted direct to the rod to give good heat carrying contact. Small end bearings are bronze bushed. The one piece cast aluminum crankcase is heavily webbed. Cover plates are heavy steel stampings. The oil pan is easily removed for inspection of bearings. Main bearings are of a new anti-friction metal developed for use in airplane engines. This metal is a copper lead alloy which not only has long life but will not melt out or score shaft even when run momentarily without sufficient lubrication.



The new Cleveland four-cylinder motorcycle

The lubricating system consists of two rotary gear type pumps, one forcing oil to all crankshaft bearings, the other drawing oil out of the crankcase and returning it to the main oil tank by means of a sufficient length of copper tubing to cool the oil. An oil gage is mounted on the head of the machine. Ignition is by a gear driven Bosch high tension magneto with variable spark mounted on top of the gear box.

A ¾ in. Schebler de luxe carbureter with adjustable choke for starting is furnished. The manifold is tubular type. The muffler has a large expanding chamber with no baffle plate or inner wall to cause back pressure. No cut out is fitted and the entire muffling system is said to be very effective.

The single plate dry disk clutch is a separate unit built into an external fly wheel. The large area of the clutch permits the use of six light pressure springs, making clutch control very light. Transmission is three speed progressive with hardened nickel chrome steel gears. Gear shift locking mechanism is enclosed in a strong aluminum box. Drive is by Diamond heavy roller type chain, ⅝ in. pitch, ¼ in. wide, operating over large sprockets. Gear ratios are: 4⅛ to 1; 6¼ to 1; 9⅝ to 1.

Step starter with engaging mechanism completely enclosed is used. The frame is duplex type with torque tubes running from gear box to rear wheel. All frame fittings are drilled from solid drop forgings. The front forks are of the double type designed to absorb both light and heavy shocks. The one inch handlebars are bent to give a comfortable riding position with the grips spaced 30 in. apart. Throttle control is in the right hand grip with spark in the left. The gear shift lever is on the left side of the machine is so placed as to be forward of the rider's knee in all positions. The brake is controlled by a foot pedal at the left side. The clutch is controlled by a rocker pedal with friction device on the right side.

A 2¼ gal. fuel tank and 5 pint oil tank are mounted on pads brazed to the lower tank tube. Individual boxes to hold the battery and tools form a twin mounting directly under the saddle. Full crown guards of cold rolled steel give ample clearance around the balloon tires and drop sides effectually trap splash. The drive chain has a guard over its entire length and the fly wheel is fitted with a cast aluminum guard. Large area folding footboards are mounted to afford a comfortable riding position.

Wheels are 26 in. diameter with 36 spokes, mounting 26 by 3.30 balloon tires. Wheelbase is 57 in. Hubs are one piece steel shells fitted with Timken roller bearings and knockout axles front and rear. The double acting brake is a full wrap external type, one inch wide, operating on a six inch drum located on the left side of the hub. A Mesinger saddle mounted on a leaf spring at the front and compound coil springs at the rear is 27 in. from the ground.

Electrical equipment consists of Splitdorf generator, Waco storage battery, Klaxon horn, and head and tail lights, ammeter switch, etc.

German Three-Wheeled Tractor is Fitted With Diesel Powerplant

Single driving wheel has one set of stationary and one of adjustable lugs. Auxiliary wheels for use in emergencies.

AN interesting farm tractor, known as the Benz-Sendling, is manufactured by the Benz Works of Manheim, Germany, and is equipped with the two-cylinder Diesel engine described in a recent issue of Automotive Industries. The frame is built up of rolled steel channels and steering is by means of an automobile type of front axle, the tractor having two steering wheels at the front and a single driving wheel at the rear. At the front the frame is supported on helical springs.

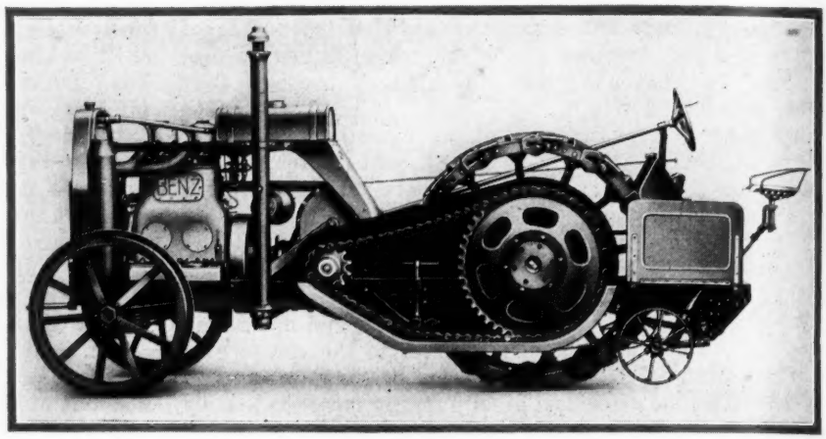


Fig. 1—Benz-Sendling three-wheeled farm tractor with Diesel engine

Transmission from the 30 hp. two cylinder engine is through a dry-plate clutch and a flexible (spring type) coupling to the gearset, which provides for one speed in each direction. The transverse shaft of the transmission or gearset carries at one end a chain sprocket for the final drive by roller chain and at the other end the belt pulley, which is provided with a jaw clutch. The rear driving wheel supports the frame through self-adjusting ball bearings.

The rear wheel is provided with angle iron driving lugs permanently attached, and in addition, with spade type lugs for use in operation on soft ground. These spade lugs can be adjusted in any of three positions, as shown in Fig. 4. In position *A* the spade lies in the gap between the angle irons, this being its position for road driving. In position *B* the spade is half-way out, the supporting pins fitting into holes in the rim of the drive wheel, while in position *C* the spade is all the way out, the pins then resting on the periphery of the drive wheel. The spades are fitted in position *B* for work on comparatively hard soil and in position *C* for work on soft soil. With the spades in position *C* the angle between the spade surface and a radial plane is larger than in position *B*, the object aimed at by this construction being to reduce the effort required for withdrawing the spade from the ground to a minimum.

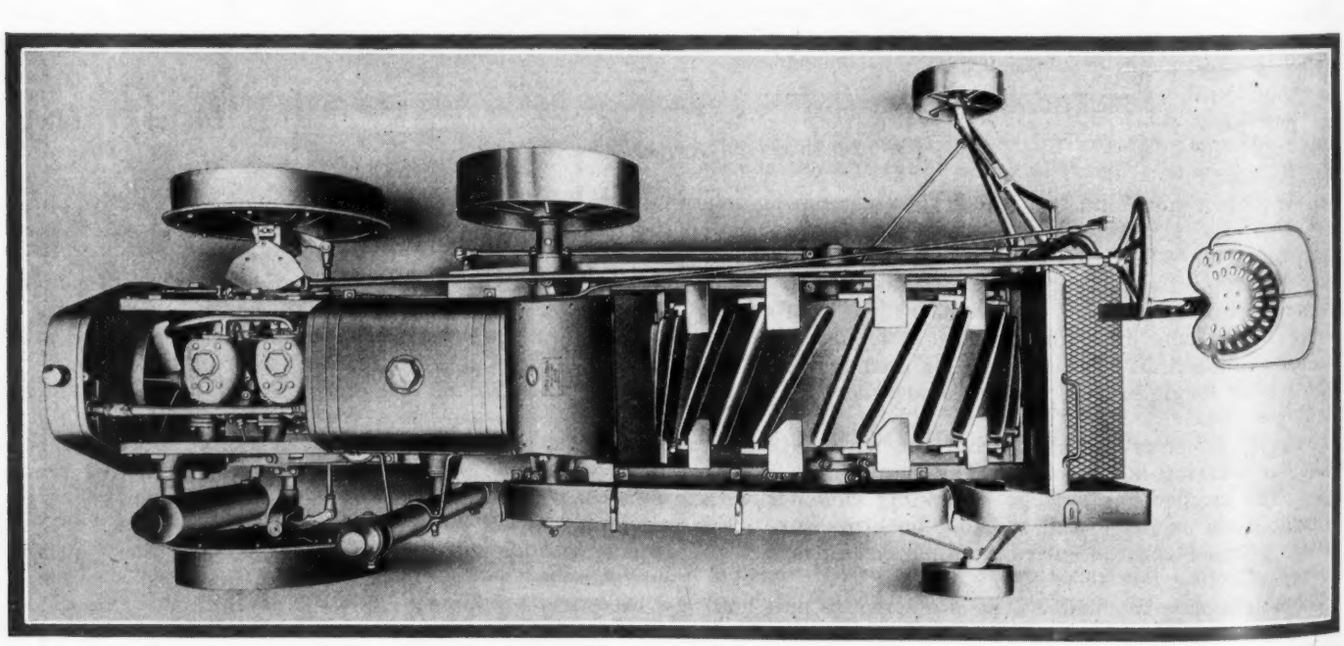


Fig. 2—Plan view of Benz-Sendling farm tractor

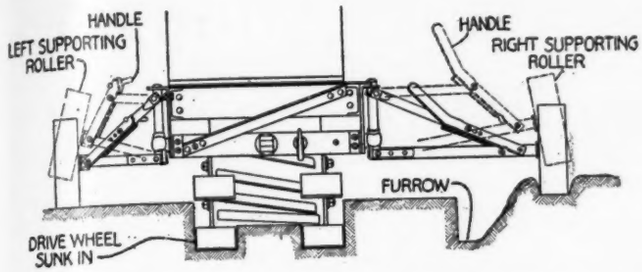


Fig. 3—Rear elevation of tractor showing use of auxiliary wheels or rollers

At the rear end of the tractor there are two supporting rollers, which are so mounted that they do not touch the ground in regular operation. However, should the drive wheel "dig itself in" on light sandy soil, as indicated in Fig. 3, the supporting rollers may be let down by straightening the toggles of the supporting structure. The plow may then be unhitched and the tractor will free itself readily.

While no change gear in the usual sense is provided, the speed of the tractor can be varied within considerable limits by engine control. Besides three sprocket pinions with different numbers of teeth are furnished with each tractor, and one or the other can be used, according to the draft required on any particular job.

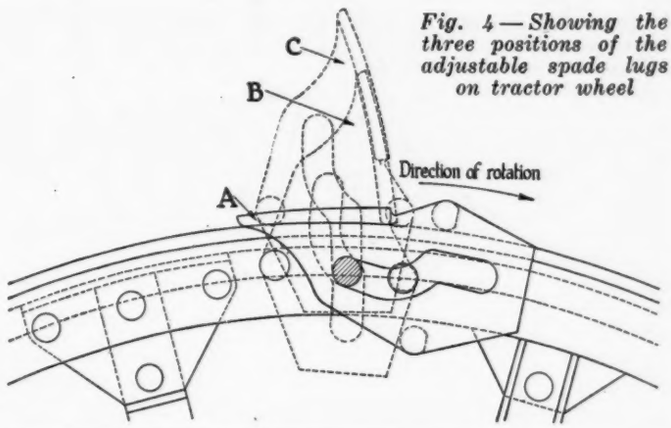


Fig. 4—Showing the three positions of the adjustable spade lugs on tractor wheel

shaft departs from usual practice in that a double Timken bearing is placed in a separate housing to withstand the heavy thrust and radial loads. The two ranges of gear ratios are as follows:

High Range		Low Range	
Rev.	4.76 to 1	Rev.	11.19 to 1
1st	4.00 to 1	1st	9.40 to 1
2nd	1.90 to 1	2nd	4.46 to 1
3rd	1.00 to 1	3rd	1.69 to 1
4th	.71 to 1	4th	1.00 to 1

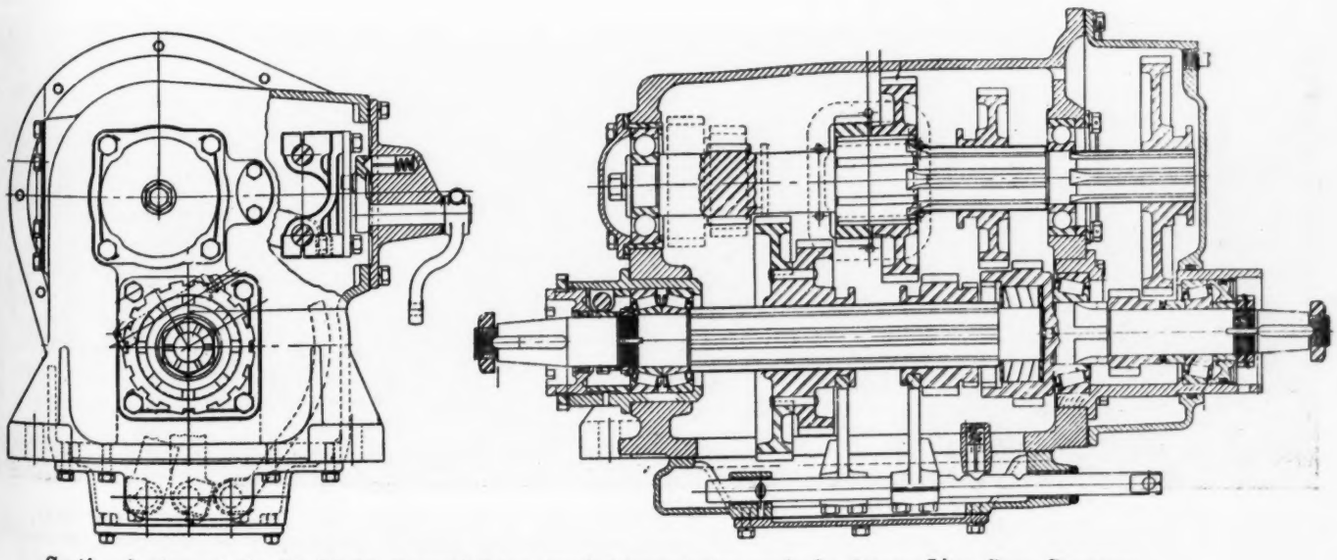
New Truck Transmission

ONE of the recent additions to the products of the Brown-Lipe Gear Company, Syracuse, New York, is the Model 70, seven-speed main frame type of transmission. This gearset, made especially for 5-ton trucks, will be shown for the first time at the American Road Builders Show to be held in Chicago in January.

The Model 70 is made with a two-speed countershaft giving the high and low ranges of four forward and reverse speeds (of which the two direct drives, of course, are the same). There is an over-drive in the high range, which permits of quick return runs of the empty truck. The transmission is made with an overhead shifting device, and an aperture for a power take-off is provided. Ball bearings are used on the countershaft, roller bearings on the main shaft.

The lay-out of the bearing at the rear end of the main

FOR more than a year past aircraft engine tests have been going on in France in connection with a competition written out by the Office of the Air Minister, which obtained credits for the sum of two million francs which are to be awarded as prizes to the successful contestants. The engines are to develop from 350-450 hp., and the weight limit is set at 7.26 lb. p. hp., including fuel and lubricating oil for 5 hours' operation. The rules of the competition provided for an elimination test consisting of a bench test of 5 hours and a flying test of 2 hours. Engines that passed through this test successfully were then subjected to a bench test of 240 hours total duration made up of continuous running test of 8 hours. A total of thirteen engines were originally entered for the trials but only eight were presented, and of these three more were withdrawn in the course of the trials.



Sectional view of the Model 70, 7-speed 5-ton truck transmission made by Brown-Lipe Gear Company

Straight Line Production Attained in Wooden Body Building

Many novel machines and methods are used by the Murray Body Corporation in building bodies. Detailed description of manufacturing processes at Bay City plant.

By Walter L. Carver

THIS article on methods used in the production of Murray bodies is in two parts. The second part will appear in next week's issue.

ALTHOUGH wood instead of metal parts are produced at the Bay City plant of the Murray Body Corporation, the underlying principles of manufacture which are common to automotive metal production prevail.

In spite of the great number and diversity of parts the plant and equipment are arranged for line production although the routing scheme in many cases necessitates passing several different parts over the same machine. Incoming materials are controlled and treated by methods and means which are easily comparable to those of the metallurgical department for metals. Process and finished inspection operations are carried on with a liberal measure of frequency and exactitude.

In the layout of the plant two incoming switch tracks and the storage yard are located along the west side of the main building which has a length of about 600 ft., the width being about 500 ft. A fire wall and safety doors divide the main building into two sections and the roof is made up of several monitors. Incoming lumber is loaded directly onto wheeled skids which are placed on light steel rails. In order to keep the lumber away from the surface moisture, all of the tracks in the storage yard are laid on concrete piers at a height of about 2 ft. above the ground. This arrangement also permits free air circulation around the entire pile of lumber.

All of the tracks in the storage yard are directed in the line of material flow which is across the plant or in the direction of the 500 ft. dimension. Ordinarily about 5,000,000 board ft. of lumber are carried in the storage yard although this figure may run as high as 7,000,000 which is maximum capacity or as low as 3,000,000. All lumber in the storage yard is carried on skids and remains there until it has passed through the dry kilns. During the unloading process, spacers are placed between each of the layers of lumber and the boards are separated slightly in order to insure free circulation on all sides of each board. Lumber of ordinary lengths is piled on three of the skids which run on equi-distant tracks to form a truck arrangement when the pile is complete.

A transfer track which is parallel with the side of the main building divides the storage yard proper from the deck at the kiln entrances. This deck serves as an addition to the storage yard since lumber which is scheduled for a certain kiln can be stored outside of the doors on the same track until the previous load is discharged. This period varies from 7 to 35 days. The transfer car as shown by Fig. 1, is operated electrically and carries a power winch which is utilized for drawing lumber out of the storage yard and also for loading the kilns. When loading the car from the storage yard a cable carrying a hook is hitched to the middle skid and in loading the deck or kilns the same cable is passed around a sheave located

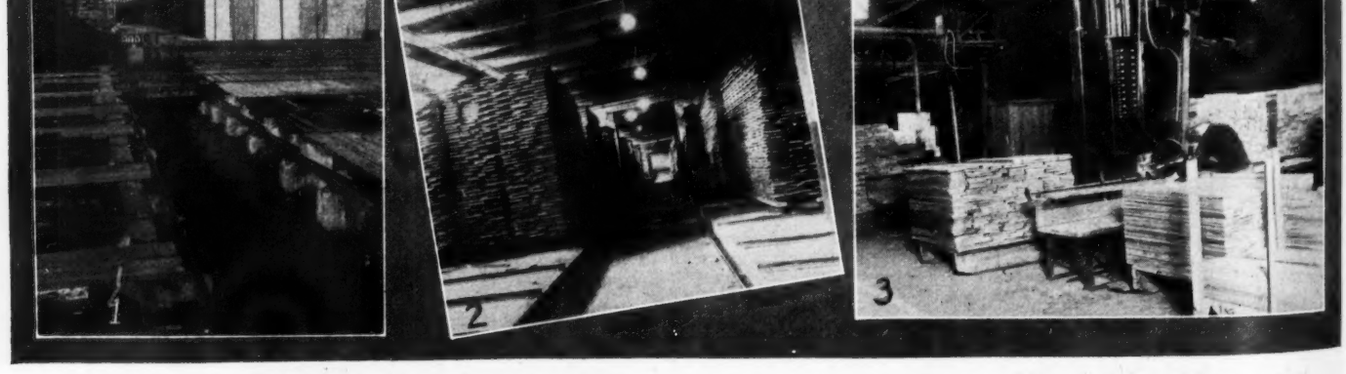


Fig. 1. Green storage at the left, transfer track with electric truck in center and kiln deck and doors at the right. Fig. 2. Inner doors of dry kilns, inside transfer track and portion of dry storage. This space is maintained at 72 deg. Fahr. Fig. 3. Some of the stock or cut-off saws with dry storage in background

Fig. 4. Band rip saws which are equipped with self-feeding device and individual electric drive. Fig. 5. Jointer which machines base surface for subsequent operations. Note self-feeding mechanism. Fig. 6. Sticker line where parts are surfaced on all four sides

near the kiln door. By some ingenious manipulation which utilizes a short pole, the winch and cable are used to push the load into the kiln.

Outer doors of the dry kilns form practically the entire western exposure of the plant. When a kiln is closed for a run the doors are clamped into place to form air tight joints. These doors are not hinged but are carried to one side by a separate trolley and jack arrangement when the kiln is to be loaded.

All Wood is Dried

Probably 20 different kinds of wood are used in general production in this plant and not a single board gets into the plant without passing through a drying process. The bulk of the wood used is oak, hard maple and birch, the latter two being used almost interchangeably. Practically all of the incoming oak is rough finished four quarter or one inch thick stock which requires the shortest time for passage through the kilns. Birch and maple for the most part are received in eight quarter and twelve quarter or respectively 2 in. and 3 in. thickness.

When received, oak ordinarily shows a moisture content of 16-20 per cent while birch and maple contain 25-35 per cent depending somewhat upon the thickness of the stock, the content being higher for the thicker stock. As all stock in the plant is required to contain 5-7 per cent moisture content, it is the job of the dry kilns to produce this result. For oak of 1 in. thickness, 7 to 8 days in the kiln are required while birch and maple of 2 in. thickness require about 21 days and the 3 in. lumber requires 31-35 days. At the present time about 2,500,000 board ft. per month are passed through the kilns.

Peculiarily, the drying process is accomplished best by spraying live steam into the kilns although the requisite temperatures are maintained by steam coils. The greatest foe of satisfactory drying is case hardening, a condition in which the surface of the board drys and hardens too rapidly and seals the mosture which is contained at the heart of the board. In normal drying, the sap cells are caused to burst, releasing the moisture which contains sap, acids and water. For the best results and insurance against deformation in the shop and in service, this process should occur from the center outwards.

When a fresh charge of lumber is placed in the kilns, it is steam sprayed for 24 hours and brought up to a temperature of 142 deg. Fahr. for three days. The amount of steam spray varies with the original moisture content of the wood and this treatment is varied throughout the period in the kilns in accordance with tests which are made periodically. These tests begin with the receipt of a shipment. Samples are cut from the ends of representative boards and are weighed. Following this, these samples are subjected to a quick drying process in a small oven and then are weighed again. The ratio of the loss in weight to the second measurement determines the percentage of moisture content. In addition to the weighing test which is continued periodically through the kiln drying period, samples of ⅛-¼ in. thickness are cut across and with the grain. Those taken with the grain are tested for the relationship of surface to interior moisture content while the samples taken across the grain are sawed and broken out comb fashion and examined for distortion. In practically every case the sawing operation constitutes an accurate check on the condition of the sample. If the wood is dried evenly from the center out, the saw cuts freely and leaves a slot of uniform width and parallel sides behind it. If the drying is not uniform and case hardening is present, the sample binds on the saw as the two sections following the saw tend to spring together.

Hollow Walls Separate Kilns

Hollow walls, which are vented at the top, separate the kilns and each kiln is equipped with an arrangement of shutters which is manipulated from the inside of the plant. Both circulation and ventilation are required for the closed kilns. While the addition of steam to the charged kiln seems anomolous, it must be remembered that the weight of moisture in the steam which is introduced is almost infinitesimal when compared to the moisture content of a full charge of moist lumber, the total weight of which contains as high as 25-35 per cent moisture. Hygrometers are used to determine the moisture content of the kiln atmosphere and Foxboro pyrometers record the temperature which never exceeds a maximum of 160 deg. Fahr. All of the kilns at this plant are the product of the National Dry Kiln Company.

At the present time a system of moisture control is in experimental operation in one of the kilns. With the

new apparatus, the Electric Cyclspray which is manufactured by the Kiln Supply and Mfg. Co. of Indianapolis, steam is sprayed into the kiln automatically at predetermined intervals which run from 1 to 2½ hrs. This equipment with its automatic control of conditions within the kiln insures the absence of case hardening, speeds up the drying process and eliminates some of the inspection operations.

When the drying process is complete and the lumber indicates a moisture content of 5-7 per cent, the skids carrying the piles are withdrawn from the inner ends of the kilns, which are equipped with the same type of doors as the outside, and then are delivered to the correct line in the dry storage by means of another transfer track, as shown by Fig. 2. This dry storage floor, which has a capacity of about 3,000,000 board ft., is maintained at a constant temperature of 72 deg. Fahr. Here the dried lumber is allowed to stand for at least 48 hrs. before delivery to the stock saws. This is known as the sweating period and amounts to a readjustment from the atmosphere of the kiln to that of the shop. Due to the diversity of product it will be impossible to trace each part through the shop. However, the basic or first group of operations on parts of all descriptions are much alike. These operations will be discussed as will typical machine functions and two or three of the larger parts such as body sills and hood rails will be followed through the complete program.

Another Transfer Point

At the west side of the dry storage floor another transfer track is placed, although, due to careful scheduling through the kilns and into the dry storage, this track is used but little as the correct lumber for the operations of any particular line is spotted at a point adjacent to the first machine operation.

Immediately across this transfer track are located 26 swing stock saws which form the first stations of the same number of production lines which extend across the plant at right angles to the transfer track. As illustrated by Fig. 3, these saws which are made by the H. B. Smith Co., are pivoted at an overhead mounting and are driven by individual electric motors. Boards are placed upon the saw tables against adjustable stops and are cut off to the rough length of the part by swinging the saw assembly across the table. Short ends and scrap from this operation fall into an underground scrap conveyor which conducts them to one end of the plant where they are used as fuel.

From the cut off saws, the sized lengths are passed to the rip saws where they are cut lengthwise to the rough thickness or width of the specified part. In some cases, such as sill stock which is to go to the Linderman machines later, defects are sawed out at the rip saws, leaving only sound, straight grained stock. In all, 27 rip saws are used. These are either band rip saws made by the West Side Iron Works as illustrated by Fig. 4 or Mattison circular rip saws.

Individual Electric Drive

Individual electric drive is used for the rip saws as for all of the machines in this plant. Whether small or large each machine in the entire plant has its own motor and practically every machine is equipped with a suction pipe which connects with one of the overhead blowers. Strip scrap from the rip saws and succeeding operations is fed into the "hog" or shredder which is located in line with the swing stock saws at about the middle of the shop. The shredder is located below the floor level so that small dump trucks can be emptied into the hopper. The scrap is torn into small pieces and carried to the boiler house by the exhaust fan system.

At this stage the material for any specified piece is in the form of a rough rectangular board. In order to provide control for all later dimensions and surfaces, it is necessary to provide one flat finished side which serves as the base for subsequent operations. This work is done in Jackson and Church jointers as illustrated by Fig. 5. Following the jointer operation the path of pieces varies according to size, shape and dimension.

Jointed stock for strips or parts of uniform cross section rectangular or otherwise are sent to the stickers where their four sides are finished in one pass through the machine. Three makes of jointers, Vonnegut, Yates and

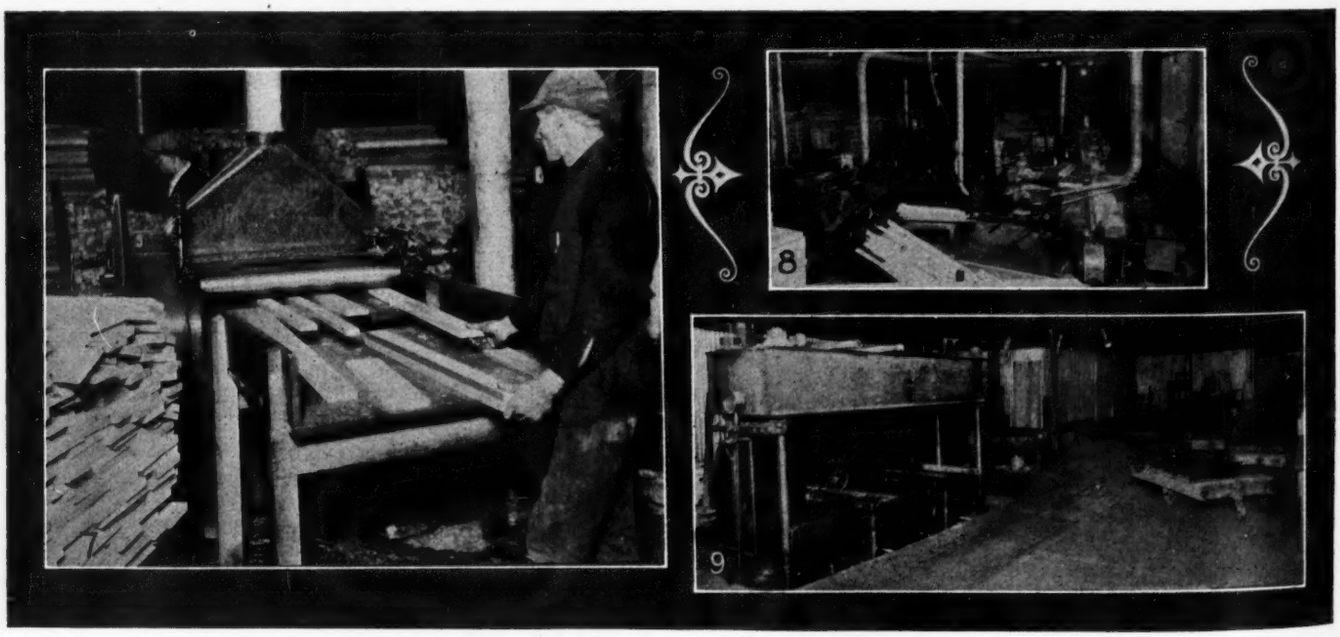


Fig. 7. Double surfacer which finishes both sides of material in one pass. Fig. 8. Linderman machine which joins two or more strips or boards into one piece. Fig. 9. Hot room, showing hydraulic press and glue roller as well as trucks which are used in this department

the Mattison all-electric drive are used and the basic characteristics are much alike. A section of the jointer line is show in Fig. 6. The work is fed in at the front end and passes first between a pair of horizontal cutters for finishing the top and bottom surfaces. As the pieces leave the first pair of cutters they pass again between another pair of cutter heads, the axes of which are in the vertical plane. In the case of small corner brace blocks, etc., the parts are cut to length after the forming operation while long pieces such as straight roof slats are cut to length before the sticker operation.

Stock for door pillars, stringers, etc., leaves the jointers and passes through Whitney or Yates double head planers as shown on Fig. 7 where both sides are finished preliminary to the subsequent profile operations. Stock which is to become part of laminated roof rails, sills, floor boards, seat risers, battery covers and corner and trim blocks is delivered from the jointers to the Linderman machines of which there are six in this shop.

Machines Unusual in Design

These machines have no parallel in metal working shops and anyone interested in machine design or the fabrication of materials will be struck by their comprehensive handling of a mechanical problem and the novel character of their product. As illustrated by Fig. 8, boards or strips are placed on conveyors at either end and fed toward the center. As they move inward each passes a cutter head where one of the mating members of a dovetail joint is cut in each piece. At one end, one of the pieces passes a rotary glue brush which applies a generous coat of glue to the newly formed dovetail member. This coat of glue first serves as a lubricant as the two portions of the dovetain joint are slid together endwise, one over the other and then, when dry, reinforces the strength of the mechanical join beween the two parts which comes off the machine as one piece. In the case of sills which are cut from widths of 27 in. floor boards and other wide parts, this process is repeated as many as four times to produce the desired width. When something more than the desired width has been built up by the Linderman process, the resultant board is passed over a rip saw adjacent to the machine and trimmed to the specified width.

Contouring on Band Saws

Door and body pillar stock which has passed through the double surfacers then is passed to the scroll band saws for rough contouring. Before arriving at the saws the stock, which is finished on both sides, is marked by means of templets which produce the rough contour of the part and allow finish for the latter operations. Depending on the size and shape of the part, fixtures are used for the scroll sawing operation. For others which are flat and fairly large no fixtures are used but the work is maneouvered around on the saw table. Usually the fixtures are made of wood and are equipped with clamps if the part is cumbersome or difficult to hold. The saw table is not fitted with stops or guides of any kind and it is necessary for the man to follow the line with his eye in guiding the piece past the band of the saw. In the scroll saws the bands are relatively narrow to allow the work to be swung in forming curves while the band rip saws discussed in previous paragraphs are fitted with wide relatively thick bands.

Where the door pillar is part of a body which has a great overhang or must be shaped for rear fender clearance two pieces may be glued together before the later finishing operations. For this work a Billstrom continuous gluing rack is used. This machine bears some of the ear marks of the usual automotive continuous conveyor. Clamps project from the conveyor chain. Operation is intermittent as parts first are passed over a mechanical glue roller and then clamped up in the racks at the head of the machine. The operator then trips a treadle which throws the loading guard rail out in the clear and advances the chain by the distance of one station after which the guard rail returns to its original position. Then the operator removes the glued parts which are in the set of clamps presented and repeats the operation.

A Different Gluing Process

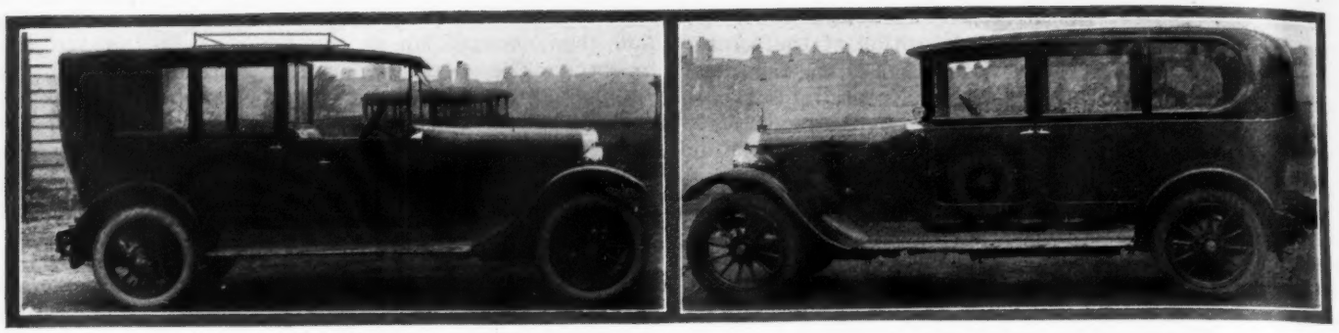
Due to the greater size, the gluing process for sills and hood rails varies appreciably from the routine of the previous paragraph. As mentioned earlier, sill stock is built up into 27 in. widths of one inch rough oak boards which are surfaced on one side and then joined in the Linderman machine. After leaving this machine, the 27 in. widths are passed through a double surfacing machine and finished on the top and bottom to a thickness of 7/8 in. These built up boards then are delivered to a hot room which has a temperature of about 140 deg. Fahr. for the purpose of heating the surfaces preliminary to the gluing operation in which two boards are glued together to form a laminated board of 1¾ in. thickness.

The hot room serves as process storage for the gluing operation. In the first stage of this process one board is passed over a rotary glue spreader after which another board is placed upon this glued surface. Twenty assemblies of this kind are stacked into a hydraulic press and then are subjected to a pressure of 125 lbs. per sq. in. and clamps are applied while the pressure is on. The press, glue spreader and general arrangement of this room are shown in Fig. 9. After the application of the clamps, the entire stack is transferred to a wheeled truck and allowed to stand for 24 hours before delivery to the scroll band saws for the rough profiling operation. Here again a templet is used to mark off four sills on each board and the sawyer follows these lines to produce four rough sills with but very little waste. For some classes of bodies, the sills are made from a single board of birch or maple. In this case the Linderman and gluing operations are eliminated. This portion of the description of sill manufacture does not include the kick-up over the rear axle, the manufacture and application of which will be discussed later.

Preparatory operations on hood rails follow somewhat the same program with a change in the wood used. Maple and birch and sometimes one of the softer woods are used more liberally. Where the rail has a wide sweep to conform to the shape of the body, a short piece is glued on to form the top of the curve. In this way scrap is eliminated and lumber is conserved.

A NEW device for indicating the temperature of the engine cooling system, known as the Calometer, has been developed in England and is being manufactured by Wilcot (Parent) Co., Ltd., 26 Avenue Chambers, Southampton Row, London, W. C. I. It is understood that this device will be introduced in the United States early next year.

The body of the instrument is a zinc alloy die casting. A brass tube which goes through the hole in the radiator cap is cast into this body. This tube holds a plug on which is fixed the piece of thermostatic metal, which, at its top end, engages by a slidable connection in a slot with a tooth quadrant which in turn engages with a pinion on the shaft to which the pointer is fixed. The metal thermostat is said to reflect accurately changes in temperature. The instrument measures temperature ranging from the freezing point to the boiling point and is visable at night due to the open dial construction. The marks on the glass are said to be permanent and the whole instrument is heavily nickel plated.



A 20 hp. Austin five-passenger phaeton converted into a seven-passenger laudaulet. At right: Austin phaeton converted into a sedan

British Firm Converts Open Cars Into Closed Models

Standardization makes conversion of Fords and some British cars but a few hours' job. Work is inexpensive.

A LONDON firm of motor body builders is specializing in the conversion of open cars into sedans and landaulets, and has already applied its system, patented in England, to a large variety of existing bodies. The latter have ranged from Fords and light cars to the 40-50 hp. Rolls Royce, and the conversions are carried out in such a way as to make the converted body indistinguishable from one that has been built throughout as a closed car. The tops are not detachable, but are built into the old body, making the two as one.

Various options are offered to the owners of existing cars. They can have sliding or drop windows, a square rear quarter and roof or a curved roof and pronouncedly curved back; the doors and door openings can be as in the original body or wider.

The system employed is to remove all the upholstery and some of the panels and then to cut away certain of the vertical timbers and substitute new ones to carry the roof. The original front screen is displaced by one of the usual closed car type, with side supports consisting of vertical timbers rising from the framing of the cowl. When sliding windows are to be fitted the original doors can be used with extensions of the frames to carry the glass and a transverse top rail. But new doors are required in nearly all cases when drop windows are fitted, and it is generally considered preferable to widen the door openings as well. The latter is done by eliminating the usual panel at each side between front and rear doors and having only the new vertical timber to separate the doors.

New Panels Sometimes Fitted

In some cases new panels are fitted on the side and rear quarters, but only when their retention would cause a "break" in the outline of the closed body as a whole, or when, as in the case of the 20 hp. Austin of early post-war type, the panels have a decided bulge around the locker of a concealed folding top.

The alterations to the body framing are drastic in many instances, but even so the cost of the conversion to the car owner is approximately half the amount he would have to pay for a new body. Prices range from £40 to £140, according to the size of the car, the type of window glass and other variable factors.

Ford landaulets and conversions into sedans for certain British cars—the Austin is one—are standardized; thus the owner of an open body, in these cases, can drive his car into the plant in the morning and drive away with the new body later in the day, if he does not want the engine hood or cowl repainted. His old body is kept by the body firm who proceed with the conversion of it, to be kept in stock for another owner of the same type of car. These transactions really consist, therefore, of the supply of a converted sedan, with an allowance for the open body based on its condition.

EIGHTEEN trucks with producer gas power plants successfully went through a 1250 mile contest recently held in the north of France and in Belgium, where the roads are largely paved with stone blocks and the test therefore was severe. In this connection it is pointed out that while these producer gas vehicles are showing up well in contests, they are not so successful in commercial use, and a large number of truck owners, after a period of use, have given up the producer. Up to about a year ago the conversion of gasoline motor trucks to producer gas trucks was an established industry in France, but this has now petered out. It seems that producer gas vehicles are sufficiently reliable in the hands of operators who understand them and take good care of them—picked drivers, as it were—but they fail when placed in the hands of the ordinary driver.

Another thing that may have helped toward the commercial failure of producer gas is the fact that as soon as the movement was well under way the producers of charcoal greatly increased the price of that product, which is the fuel used for this purpose in France. It is now suggested that the only way to ensure the continued use of producer gas trucks in commercial undertakings is to increase the government subsidy for such vehicles.

Non-Stalling Feature of New Fokker Plane Due to Special Wing Design

Control surfaces also contribute to stability, which is gained without the use of any anti-stalling device. Provision is made for one engine or three. Weight 3850 lb. Top speed 115 m.p.h.

By Athel F. Denham

IT has been generally considered in aviation circles that one of the greatest dangers attending the flying of heavier than air machines occurs when a pilot is slowing down either to study the terrain below in order, for instance, to determine the best landing, or for some other reason, and so reduces his speed that the lift is no longer sufficient to maintain the plane in horizontal flight, the stalling of the plane being followed by nose-dives, side-slips or tail-spins.

The Fokker Aircraft Company has developed in its latest commercial ship, the F-VII, a plane that will do none of these things when stalled, but instead will settle into a steady, barely perceptible glide until power is again supplied or the plane is nosed down with the controls to obtain speed. This safety feature has been obtained not by the use of any anti-stalling device or automatic stabilizer, but, according to Fokker engineers, through special wing and control-surface designs.

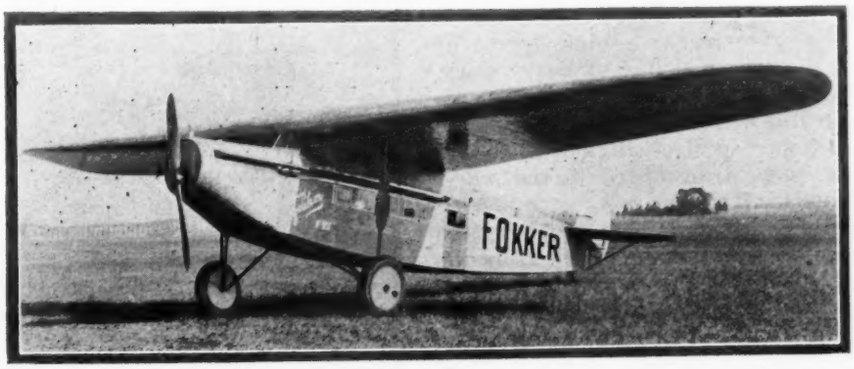
Although representing no radical departures from previous Fokker designs, the F-VII embodies in it the result of a number of years of actual commercial operation abroad of preceding types. The plane, except for minor details may be said to have been designed entirely from empirical formulas derived from previous experience. In the design of the plane according to Mr. Noorduyn of the Atlantic Aircraft Company, American constructors of Fokker aircraft, very little has been evolved through computations, as sufficient data has been obtained from previous types to enable the designers to construct the new type, using stress analysis merely as checks on empirical determinations.

As in all the Fokker planes (except the (F-V), the F-VII is a cantilever monoplane with a thick wing section at the center tapering down toward the wing tips, the wing having a span of 62 ft. 5 in. with a wing area of 646 sq. ft. The plane has an overall height of 12 ft. 7 in., and a length of 41 ft. 10 in. The wing is built entirely of wood with three-ply veneer covering. According to the Fokker Company, its planes, all of which use this type of wing construction, have been in service four to five years without showing signs of deterioration. Servicing of the wings is thus confined in most instances to an occasional revarnishing.

The plane has been so designed that it can be used with a single engine in the nose or with three engines, one mounted in the nose and two below the front wing spars, hung from the wing by Y struts. The single engine mounting in the nose is detachable by removing four bolts, the nose being so designed that mountings for different makes and types of engines can be fitted. Up to the present time the Rolls-Royce "Eagle," Napier "Lion," Lorraine-Dietrich 470 hp., and Liberty engines have been used with the single-engine mount. Three Wright J-4 radial 200 hp. air-cooled engines have been used in the multi-engined ship. With the three Wright J-4 engines, it was found that the plane would not only fly horizontally with one of the engines dead, but would actually continue to climb. With two engines dead it was able in a test to maintain practically horizontal flight with full load.

When the Liberty engine is used, a circular nose-type radiator with complete metal shuttering is fitted. The entire power plant installation is accessible on all sides by removing the sheet metal cowling, which is fitted with quick-detachable safety-pin fastenings. Doors are also provided for easy access to magnetos, pumps, etc. Starting the engine is accomplished in the case of the Liberty either with a starting handle operated from inside the airplane or with an electric starter, in which case a 12 volt ignition system is supplied.

The entire fuselage is of the well-known Fokker design of welded steel tubes, which practically has been adopted as standard by the United States Government for war planes. The fuselage section containing the cabin is reinforced by triangulated tube construction. The rear end of the fuselage is braced by wires and is fabric covered. In order to eliminate the multiplicity of pipe lines, pressure pumps and similar complications usually encountered, the fuel tanks are carried in the wing, the feed to the carbureter being by gravity only. Strainers and drain-plugs are large and easily accessible. With the three-engine installation, torpedo-shaped streamlined auxiliary gas tanks form an integral part of the wing engine mounts.



Improved type Fokker F-VIII with 400 hp. Liberty motor

All the control surfaces are constructed of steel and are fabric covered. The rudder and tail planes are balanced. The controls are light in operation and are effective even below stalling speed.

A split axle type of landing gear with a 13 ft. 6 in. track and Palmer wheels, with 44 x 10 in. cord tires, is used. It is made entirely of steel tubing. Rubber rings, easily interchangeable, make up the shock absorbers. The main landing gear shock absorber struts are vertical and are attached directly to the front wing spar except when the multiple engine mountings are used, the shock absorber struts then being carried to the lower side of the wing engine mounts, the strain being transmitted to the wings by means of the Y struts forming the engine mount. The inclined landing gear axles are hinged at the fuselage. The design of the landing gear struts lends itself well to the use of long stroke Oleo shock absorbers, if it is desired to use this type.

The cock-pit for the two pilots is situated immediately behind the engine and is reached through a door in the front of the passenger cabin. It is separated from the engine compartment by a fire-wall. A vee-shaped safety-glass windshield extending up to the wing makes the cockpit extremely weatherproof and comfortable. The floor of the cockpit is on the center line of the engine and visibility is excellent toward the front and both sides. The cockpit as well as the passenger compartment is heated by warm air. Throughout, the cockpit has been designed to provide maximum comfort for the pilot.

An unusually roomy, completely equipped passenger cabin is provided. The seats are easily removable and can be stowed in the baggage compartment when it is desired to use the entire cabin for freight. Racks for light baggage are provided overhead. The passengers' entrance is by a full-sized door at the rear of the compartment. Opposite this door there is a fully equipped toilet. Baggage is carried in separate holds at the rear of the cabin to which access is gained by a door on the opposite side to the passengers' entrance. There is a second compartment for baggage or mail below the pilot's cockpit.

Fully equipped, the weight of the empty plane is 3,850 lb.; it is capable of carrying 3,430 lb. of useful load, giving a wing loading of 11.3 lb. per sq. ft. and a power loading of 18.2 lb. per hp. Although the top speed of the plane is 115 m.p.h., the landing speed is about 50 m.p.h. Cruising speed is 98 m.p.h., with a duration of six hours, and a cruising radius of 590 miles with the present fuel tank capacity. The plane has a service ceiling of 11,000 ft., the climb to 10,000 ft., taking about 41 minutes with a Liberty engine and full load. The plane climbs to an altitude of 3,830 ft. in 9 minutes.

Following is a brief outline of the specifications and performance of the Fokker F-VII.

	Fitted with: Single Liberty Engine, 400 hp.	3 Wright J-4 Radials, 200 hp. ea.
Dimensions:		
Span	62 ft. 5 in.	62 ft. 5 in.
Length	41 ft. 10 in.	45 ft.
Height	12 ft. 7 in.	12 ft. 7 in.
Wing area, including ailerons	646 sq. ft.	646 sq. ft.
Track of landing gear	13 ft. 6 in.	13 ft. 6 in.
Weights:		
Weight empty (equipped)	3850 lb.	4620 lb.
Crew (pilot and mech.)	350 lb.	350 lb.
Passengers and baggage	2100 lb.	1750 lb.
Fuel and oil	980 lb.	1250 lb.
Useful load	3430 lb.	3350 lb.
	7280 lb.	7970 lb.
Unit Loadings:		
Wing loading	11.3 lbs sq. ft.	12.3 lbs. sq. ft.
Power loading	18.2 lbs hp.	13.31 lbs hp.
Performances with full load: (Corrected to standard atmosphere and temperature)		
Duration at cruising speed	abt. 6 hrs.	abt. 5 hrs.
Times to climb 1000 m (3280 ft.)	9 min.	7 min.
2000 m (6500 ft.)	20 min.	16 min.
2000 m (10000 ft.)	41 min.	31 min.
Service ceiling	11,000 ft.	15,000 ft.
Top speed	115 mph.	120 mph.
Cruising speed	98 mph.	100 mph.
Landing speed	50 mph.	52 mph.

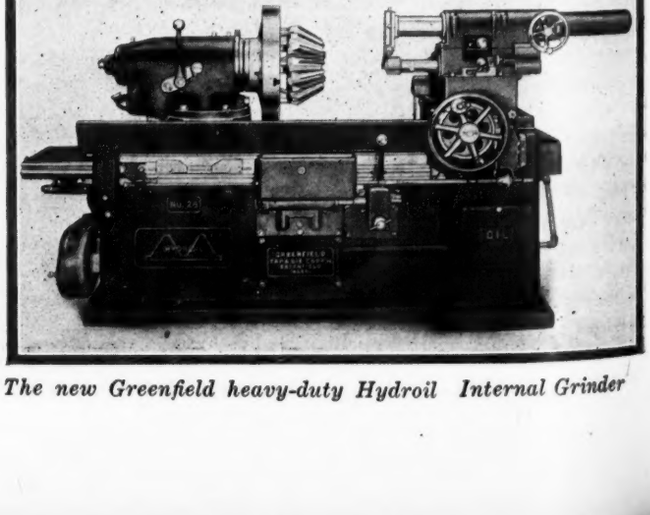
Greenfield Heavy-Duty Hydroil Internal Grinder

AN internal grinder particularly adapted for big bore grinding operations, and known as the Hydroil No. 28, has been brought out by the Greenfield Tap and Die Corp., Greenfield, Mass. It is furnished in two sizes, of 28 and 36 in. swing, respectively, and will grind holes 16 in. in diameter by 15 in. in depth. Taper work can be ground, and means are provided for grinding the face of the work during the same setting at which the hole is ground.

From the illustration it will be seen that the grinder is built low, the objects being to insure a high degree of rigidity and to provide for easy handling of heavy work. The wheel head slide has only a cross movement on a massive bridge which is provided with one flat and one V way. This design is said to assure perfect alignment and to permit of ample power being transmitted to the wheel spindle without objectionable vibration.

The machine is entirely self-contained, requiring no countershaft. It may be driven by a single belt from the line shaft, or through a silent chain from a motor secured to its base. The work table is reciprocated hydraulically by oil under pressure, through a cylinder and piston. The speed of this table is regulated by a valve at the front of the machine, convenient to the operator.

The machine will take wheel spindles of different sizes to suit the work in hand. When arranged for 28 in. swing, the center of the work spindle from the floor is 44 in. When arranged to swing 36 in., the height from the floor is 48 in. The floor space required is about 11½ x 5½ ft. The weight of the machine is about 8,800 lb.



The new Greenfield heavy-duty Hydroil Internal Grinder